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DENTAL ADVERTISER

A QUARTERLY JOURNAL, DEVOTED TO
THE ADVANCEMENT OF THE
DENTAL PROFESSION.

CONDUCTED BY
THEO. G. LEWIS, D. D. S.

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INDEX TO VOLUME XVII.

	PAGE.
AUTOBIOGRAPHY OF A TOOTH,	6
AMALGAM SOLVENTS,	16
A CASE IN PRACTICE,	31
A CASE OF BROKEN PORTION OF A TOOTH FORCEPS IMPACTED IN THE AIR PASSAGES AND SUCCESSFULLY REMOVED BY TRACHEOTOMY,	64
ANÆSTHESIA AND DENTISTS,	69
AMALGAM FILLINGS, EFFECTS OF,	72
A VISIT TO FOREIGN DENTAL SCHOOLS AND OTHER OBSERVATIONS,	108, 132
AN INSULT TO BRITISH DENTISTRY,	115
A REPREHENSIBLE PRACTICE,	116
A BROKEN JAW,	117
A DOCTOR'S LUCK,	121
AMERICAN DENTISTS ABROAD,	122
A METHOD FOR REMOVING FOREIGN SUBSTANCES FROM THE EYE,	123
AN ACTION AGAINST A ROCHESTER DENTIST,	123
A NEW ANÆSTHETIC,	139
A CURIOUS CHRISTMAS BOX,	152
BRIDGE WORK,	96, 151
BITING OFF THREADS,	120
BUFFALO'S MEDICAL JOURNALS, COLLEGES, ETC.,	123
BOOK NOTICES,	42, 85, 126
BOOKS RECEIVED,	44, 85, 126, 159
COCAINE IN DENTISTRY,	1
CERVICAL EDGE,	13
COCAINE ABUSED,	27
CHALFANT'S PARDON,	35
COCAINE IN OPHTHALMOLOGY,	37
CORUNDUM,	38
CURIOUS ILLUSTRATION OF AN ERROR IN A PRESS DISPATCH,	82
CONTRACTION OR EXPANSION OF AMALGAM,	153
DENTAL DRAWBACKS,	3
DR. JOHN M. RIGGS,	36
DIAGNOSIS—ITS IMPORTANCE,	74
DR. G. C. DABOLL,	83
DENTAL HABITS,	104
DEATH FROM CHLOROFORM,	114
DENTAL PATENTS,	44, 86, 126, 160
DENTAL SOCIETY MEETINGS,	81, 123, 154
DR. WILHELM HERBST'S AMERICAN VISIT,	146
EXPLOSION AT HELL GATE,	24
EFFECTS OF AMALGAM FILLINGS UPON THE SYSTEM,	72
EVOLUTION OF ARTIFICIAL TOOTH CAPS AND CAP-CROWNS AND BRIDGE-WORK,	87
EXSECTION OF DENTAL NERVE—TWO CASES,	106
EXPLOSION OF A SEABURY VULCANIZER,	141

INDEX.

	PAGE.
FINISHING AND POLISHING FILLINGS,	25
FACTS VERSUS FANCIES,	76
FLUCTUATIONS IN COCAINE,	80
FILLING MATERIALS,	129
FLAME CONTACT, A NEW DEPARTURE IN WATER HEATING,	136
GOLD AND SILVER USED IN THE ARTS AND MANUFACTURES,	123
HYDROPHOBIA—M. PASTEUR,	38
HOW TO WAX UP A CASE,	39
INTERNATIONAL MEDICAL CONGRESS,	36
INHALER FOR ETHER,	119
KISSING FROM A MEDICAL STANDPOINT,	38
LADY MEDICAL EXAMINERS IN PARIS,	75
MAN ATTACKED BY A HORSE,	37
MENTAL TRAINING,	77
MISCELLANEOUS NOTES,	40, 84, 158
MUCH OR LITTLE WATER IN VULCANIZING?	127
NECKLACE OF MUMMY EYES,	14
NEW YORK ODONTOLOGICAL SOCIETY,	17
NEW PROCESS FOR HARDENING PLASTER,	32
NEW EXPERIMENTS AND OBSERVATIONS ON HYDROBROMIC ETHER OR THE BROMIDE OF ETHYL AS AN ANÆSTHETIC,	45
NEW PROCESS CHLOROFORM,	154
OLFACTORY FUNCTIONS IN RELATION TO DIAGNOSIS,	11
OF COURSE,	120
POLISHING FILLINGS,	25
PROFESSIONAL RETICENCE,	33
PATENT ON DENTISTRY,	39
PRINCIPLES AND METHODS OF FILLING TEETH WITH GOLD,	58
PROSECUTION OF A DENTIST,	79
PROFESSOR HUXLEY ON SMOKING,	119
PRESENCE OF A THIRD PERSON IN THE ADMINISTRATION OF ANÆSTHETICS,	121
PYORRHOEA ALVEOLARIS, ON THE TREATMENT OF,	148
SOME OLD THINGS IN MEDICINE,	30
SYPHILIS, TRANSMISSION OF,	83
SCHOOL IN DENTISTRY,	83
THE FIRST STEP TO PROCURE A PROPER BLOW-PIPE,	122
THE TRANSMISSION OF SYPHILIS,	83
THE MODUS OPERANDI OF NITROUS OXIDE GAS AS AN ANÆSTHETIC—THE NATURE OF THE SO-CALLED "DENTISTS' LEG,"	143
WAIL OF THE SECOND BICUSPID,	66
WHAT DOES HE MEAN,	71
WHAT DOES ANTISEPTIC SURGERY REQUIRE,	153

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COCAINE IN DENTISTRY.

BY G. C. DABOLL, M. D. S., BUFFALO, N. Y.

Read before the 7th and 8th District Dental Societies, October, 1885.

It is generally conceded now by those who have experimented with cocaine in dentistry, that its effective use is almost entirely confined to the soft tissues; and up to this time, as an obtunder by direct application to the cavity of decay in teeth, its effect is not such as to warrant any reliance upon it. However, if its scope is limited, it has yet so many virtues that the dentist cannot afford to ignore it in dental therapeutics.

Modern dentistry is not confined to operations upon the tooth structure alone. The treatment of pyorrhea alveolaris, of chronic abscesses, of the various diseases to which the mucous membrane of the oral cavity is subject—all make the advent of a reliable agent for local anæsthesia a welcome guest among the many remedies in dental medicine. It is interesting to observe how soon an operator becomes dependent on a new remedy that is reliable.

The oculists now use cocaine for many operations upon the eye, where formerly general anæsthesia by ether or chloroform was absolutely necessary, and find their ease and comfort and certainty of manipulation greatly augmented, while with the patient the fear of the operation is entirely removed, for the dread of ether and chloroform with many is quite as great as the apprehension of pain. With the dentist the use of cocaine is quite as important as with the oculist, for with its use general

anæsthesia can be avoided in every case. I say this advisedly, for I have used it for every operation for which formerly the use of ether or chloroform was necessitated.

Not long since I had occasion to remove nine teeth for a patient who would not take chloroform or nitrous oxide, and yet who dreaded the pain, although he had been accustomed to quietly endure whatever was necessary in operations on his teeth. I proposed the use of cocaine. He made no objection, but expressed himself as very skeptical as to the result. I confess I was not completely assured myself, but, procuring a freshly-prepared four-per-cent. solution, I injected the gum on both sides of the tooth—labial and lingual—eight to ten minims, and after waiting about ten minutes, to my great satisfaction, and his enthusiastic delight, I extracted the tooth absolutely without pain. I proceeded to remove two more at that sitting, and the effect was the same, and two days afterward extracted the remaining six in the same manner. There was one observation I made in this case which I note here: the subsequent irritation and soreness was much more severe than usual in such cases, indicating that cocaine is more or less an irritant of the soft tissues. Shortly after this, I had another case where it was necessary to remove the right superior first and second molars. The patient said she felt the pain slightly—not worth speaking about.

I had a case of chronic abscess (of several years standing) of the left superior lateral incisor root, filled. An examination through the sinus disclosed quite an extensive pocket extending down half the length of the root. It was necessary in the treatment of this to break up the sac, and with the proper instruments remove any deposit that might have formed on the root, an operation which, if thorough, is necessarily painful. Without consulting the patient I injected the cavity full of cocaine, and now witnessed a curious physiological phenomenon. The patient, an extremely intelligent lady, in some alarm asked what I had done, and said I must have used an anæsthetic, for she felt so drowsy. I explained, and said its effects were purely local, but she said it could not be so in her case, as she felt the drowsy effect in a very marked manner, which, by the way, did not pass entirely off for a half hour. The local effect was all that could be desired, the operation being entirely painless, and I will say in passing, as it may be of some interest, I effected a complete cure of the abscess, but not until I resorted to a tent, all other methods failing.

In pyorrhea alveolaris its use is very happy, and has enabled me to secure a success in the surgical part of the operation where I had failed before on account of the extreme painfulness, which had made it impossible to be thorough, through the sheer inability of the subject to endure. Wiping out the pockets and filling them with the solution, in

ten or twelve minutes one may work as thoroughly as he desires, and will meet with no protestations of pain from the patient. Of the many minor operations one is called on to make, the lancing of abscesses, carrying the rubber dam high up on the roots of teeth, wedging, crowding the gum with clamps, especially in labial and buccal cavities,—all these may be rendered painless by the use of this agent. The application in these cases may be made by a camel's-hair brush—painting the parts, which are previously rendered as dry as possible and afterward maintained, so that the cocaine may not be diluted by the fluids and its strength impaired. I live in the belief that cocaine will yet be effective as an obtunder of sensitive dentine, although its use may not become general, having heard through a patient of a friend whose dentist accomplished the desired object by placing crystals in the cavity of decay, sealing up and leaving for forty-eight hours. I have not had an opportunity to try it this way, as yet, but propose to do so at the first occasion.

In conclusion I will say that with my limited experience I should not know how to do without it, and regard it as one of the most important among the latest additions to the dental pharmacy.

DENTAL DRAWBACKS.

BY ARTHUR F. HARE, D. D. S.

“No rose without a thorn.” Quite true! We cannot have all we wish for in this world, though some of us may get more than we want in the next. No unalloyed happiness here; no material good without its accompanying admixture of evil. Such, however, is life, and we are forced to accept things as they are, and make the best of them. Pick and choose as we may, every occupation has its disagreeable, distasteful duties.

We come into the world inheriting the germs of disease and death. Let us look for a moment at the manner in which our profession in particular favors and accelerates the development of such germs. Much has been said and written to enhance the glory of dentistry as a noble, unselfish, self-sacrificing vocation. Its bright side has been exposed to view, and all its vantage points extolled and lauded. I propose now just to draw attention in a few words to some *decided* dental disadvantages. Not with a view, however, of discouraging the earnest student from pursuing his curriculum, but merely of reminding you of the existence of certain

dental "breakers," if haply, we may in time learn to steer clear of them.

In the present day a general knowledge of the laws of health is fairly well disseminated among the fraternity, and many are there also of the public at large, who do their best to gain every advantage their adoption offers. Nature will indemnify herself, sooner or later, and it is well known that a compliance with her laws is essential to the maintenance of health.

In proportion as an individual respects and coincides with the laws which regulate the equilibrium of his physical man, in just such proportion will he find his health remain vigorous or feeble, robust or weak; for whether through avarice, ambition, intemperance or what not, he departs from a concurrence with nature's requirements, so in that measure will he suffer in health, and be the loser of the many blessings which health alone bestows.

Nevertheless, there are several vocations which of necessity enforce a perpetual variance with her behests, and wage constant warfare with the best interests of those who choose, or are compelled to follow such modes of life, and kill themselves to make a living. Of such, sometimes, is modern dentistry, the practice of which, all things considered, is one of the surest methods of shortening life, and of rendering existence unnatural.

Subject to certain conditions, labor is profitable and highly conducive to both mental and bodily excellence; and one of the most important of these provisions is the observance of the laws of health. Whether or not the work be agreeable to us, would be another cause why its performance would be promotive or destructive of health; but this supposition does not concern us in the present connection.

Now, take a farm laborer for example. There he is: illiterate, unsophisticated and ignorant, yet withal a model of physical strength—the very "picture of health," a living reproach to the towns-man, who might well envy his powerful physique. Yet this farmer has but regularly followed his daily toil, and in doing so has become strong and healthy, for *his occupation* offers the greatest possible facilities for the perfection of physical development, and the preservation of health, and is in the most complete harmony with those laws which govern the well-being of the human economy. Unless he lives intemperately he cannot choose but be a healthy man, *cæteris paribus*.

Now look at the dentist. Brought up in a workroom below the ground—all day there, from eight in the morning till six at night, perhaps earlier, perhaps later; sitting in a cramped and tiring position alongside a boiling vulcanizer, breathing an atmosphere of zinc fumes, acid fumes, etc., etc., instead of the invigorating air of the mountain side. Whether he be working at the bench, or engaged at the lathe, with his nose to the grindstone, the posture he is bound to assume is bad for the shoulders, and worse for

the chest. Sometimes the small room is without a fireplace, and a gas-stove does duty as a substitute, helping to keep the room in an unsalutary condition. Pray, what about the fresh air then?

When his time expires, how about his health? If he has not by this time graduated as a first class rebel to nature's hygienic laws, he has ample opportunity of completing his education, when he tumbles "out of the frying-pan into the"—surgery, where in the most "impossible" physical attitudes, under the most unfavorable circumstances, over foetid mouths, and involuntarily inhaling the noxious exhalations of the lungs, he expends his vital energies on—rotten teeth.

It has been truly remarked of dentistry, that it is "the most exacting of all professions, and that success therein is gained at the expense of health, recreation and enjoyment," for it is quite obvious that the work of a dentist is neither healthful nor refreshing, as work should be, but anxious and harassing, and not unfrequently both repulsive and disgusting.

About four cubic feet of pure air is the estimated amount required by the lungs per minute for the thorough oxygenation of the blood. How many dentists are there who can say they breathe *half a dozen* full inspirations of pure air during their daily work?

It is obvious that a dentist who does a large amount of filling injures his health more rapidly and effectually than does the man who confines his attention chiefly to the extraction and insertion of teeth.

Watch a dentist at work—say, on gold filling in the upper jaw—in one of the molars or bicuspid.

In the first place, he is obliged to stand so close to the patient as to make it impossible to inhale any but contaminated, second-hand air.

Then, with his left arm around the patient's head, he holds perhaps a mirror in the left hand, while the whole arm itself rests uncomfortably high—sometimes with the elbow as *high as possible*—or else so low as to necessitate a stooping posture. The right hand holds and guides the hand-piece of the engine, thus rounding the shoulders to their fullest extent; meanwhile one foot is employed in driving the treadle, and the other bears *nearly all* the weight of the body.

The knees are bent, the body inclined forward and laterally, the head half upside-down, and the whole frame assuming the most ungainly, painful, ludicrous, wearisome and injurious attitudes from time to time. These positions maintained for hours, day after day, year after year. Is it any wonder the busy practitioner dislikes long walks after business, or finds himself a prey to chronic dyspepsia, varicose veins, torpidity of the liver, abdominal disturbances, or other kindred affections?

Added to these drawbacks in working, nine out of ten men are inappropriately clothed. Physical exertion, essential for health, is good—under certain conditions—but certainly of doubtful benefit when performed

in a close, gas-heated apartment, receiving from five to fifty people in the course of the day. The workman in the field removes his coat and braces, and with loosened clothes can "set to" comfortably. The dentist keeps his coat and braces on, no matter what the weather, the work in the surgery, or his feelings may be; even though at times he is called on to perform active and arduous physical exertion, and is, moreover, hampered considerably by the patient's behavior. He is often practically in the position of a man trying to write, while another is constantly nudging his elbow, or shaking the table.

Again, he is frequently forced to remain for a time in a constrained position, when, owing to the delicacy of some fine work, he does not respire freely, but has to hold his breath, comparatively speaking, while the work is in hand.

A conscientious dentist in active practice, never lives out half his days. Two factors, worry and anxiety, both of which are inseparable from a sincere discharge of his duty, go hand in hand towards cutting short his period of usefulness, and terminating his *artificial* existence. A sailor's or a farmer's life invigorates and hardens, and tends to healthy longevity. Is this the result of twenty-five years in the surgery? Too often the reverse is the case. Dentistry of the present day does much to defeat its own object, by injuring the constitutions of those engaged in its fascinating toil, and thereby transmitting impaired vitality and *unsound dentures* to coming generations. How are future aspirants to this useful vocation to preserve their health? Mainly by *uniform* attention to *fresh air, out-door exercise* and *rest*. But, perhaps, after all, the thorough and conscientious discharge of *dental* duty is incompatible with the preservation of sound health.—*British Journal of Dental Science*.

THE AUTOBIOGRAPHY OF A TOOTH.

"Dead men tell no tales"—dead teeth do.

In writing this short sketch of my life, I shall confine myself to the *full* truth, regardless of my feelings, of my owner's, or of any professional attendants'. I shall tell all; I shall speak as freely of the evil and good I have done, as of the evil and good done me. Furthermore, I shall abstain from employing the amusing graces of poetically-licensed invention. Mine is a simple, serious story, and I shall not indulge in humorous exaggeration, for there was nothing funny in my career, as can be attested by my owner.

My name is "Right Upper First Molar." I was born in Missouri, in 1859. I am French by descent, German by parentage, American by

birth. Though my owner is of the bilio-lymphatic temperament, I was originally of a good constitution ; that is, I am of fine development, and belong to the yellow "quality." My prospects for a long, useful career were most promising, but criminal neglect in my education and want of professional attention, made me a wreck very early in life. However, I must do my owner the justice to say that he now thoroughly appreciates the truth of the saying—"Blessings brighten as they take their flight." Of late years he has spared no pains or expense to prolong my life, and to let my infirmities bear upon me as lightly as possible. He has formed a singularly sincere attachment for me, and I must confess that, for all his abuse of me, I am quite firmly attached to him.

As intimated above, my early education was sadly neglected. In fact, I had no early education ; I was fourteen years old before I became acquainted with a tooth brush ! And as for giving me the benefit of professional attention, that never crossed my owner's mind. I must not be understood, however, as blaming my owner for this utter neglect. He was born and brought up in a country village where there were no tooth brushes, and fewer dentists. To be accurate, there *was* one brush in our little town ; and well do I remember the smile of mingled contempt and pity that lit up our face, when we saw a certain young man—the dude of the village—engaged in using that brush ! We regarded brushing the teeth as an outcropping of urban vanity.

When I was about fourteen years old, my owner was suddenly brought to a realizing sense of the fact that I had some rights he was bound to respect. We were at this time in St. Louis, attending business college. For some years I had noticed that my health was gradually becoming impaired. My owner remained in careless ignorance of my condition, as I kept it to myself. The time arrived, however, when I was forced to make known my trouble. Consumption was fast closing in upon my pulp, and I could hold out no longer.

While at dinner one day, a portion of my grinding surface gave way ; but my owner regarded this with contemptuous indifference. I gave him several warning twinges ; still no attention. Then I concluded to make it interesting for him. I began regularly to besiege him. This brought the answer. His manner toward me changed wonderfully. No mother could have evinced greater solicitude for her first-born. He made my molar friends on the other side of the house do all the grinding, and asked everybody what was good for me. Among the many things he did was to treat me—and that right royally—to whiskey and to chewing-tobacco. He would sit up with me all night ; in short, it seemed as if he could not do enough for me. Finally, he made up his mind to take me to a dentist.

We went to Dr. One, on Olive street. Never shall I forget him. He

was a young man recently from college. He pointed with pride to a conspicuously-displayed diploma, granted him by one of the Philadelphia dental schools.

The doctor examined me, and said that my pulp was exposed, and must be removed before I could be filled. We told him to do as he thought best.

Dr. One looked at my owner a moment, as much as to say, "Well, I guess you can stand it." He turned to his instrument case and picked up what he called a nerve-barb. He told us to open wide and sit perfectly still—that it would not hurt very much. The doctor then applied the barb, and slowly pushed it up into my palatine root. We squirmed, and the tears rolled down our cheeks, but not a word did we say. We were trying hard to make ourselves believe what the doctor had said—namely, that it would not hurt very much. After despatching the contents of my buccal roots and placing a wad of cotton in me, he informed us that that would do for one sitting. We were quite willing that it should. We went home feeling very much better, but with an experience the remembrance of which will never fade from our memory. At the third visit, I being pronounced cured, I was filled—my roots with cotton, my crown cavity with amalgam.

In 1875, we went to Washington, D. C. Some of my associates having begun to give unmistakable signs of trouble ahead, we were taken with laudable promptness to a dentist on Pennsylvania avenue.

Dr. Two had no diploma. After attending to the other teeth he examined me, and said that *I had been improperly filled*; that I ought to receive immediate attention. My owner observed that he thought something was not altogether right with me; that once in a while a little pimple would come on the gum, discharge and disappear; but that it never gave any trouble worthy of notice.

Though I did not much relish the idea of being operated on again, my owner was persuaded that something ought to be done. Accordingly, Dr. Two took out Dr. One's filling, and began treating me with tincture of iodine. He applied this medicament to the inside, on cotton-wool tapers; to the outside of the offending root, on cotton-wool wrapped tightly around the end of a nerve instrument, and shoved by way of fistula to the end of the root. This treatment twice a week was kept up for about two months. The dentist tried hard to cure me, but his efforts were ever and anon mocked by the insuppressible pus. When he finally admitted his inability to do me any good, we asked him to fill me and make out his bill.

In 1878, my owner having in the meantime become the pupil of a dentist who had two diplomas—one dental and the other medical—I was again examined. Dr. Three said that *I had been improperly filled*.

Accordingly, he took out Dr. Two's filling. He found the cotton in the roots villainously malodorous. He at once began the carbolic acid treatment. In attempting to open the foramen of my palatine root, he pushed a remnant of the nerve through, causing my owner great grief for eight days and nights. During this time we repeatedly asked the doctor to give me the *coup de grace*, but he insisted that we should hold on. By the assiduous application of roasting-hot figs to the palate nearest the end of the troubling root, the tissues became sufficiently relaxed to permit the egress of the pus. In due course of time, the doctor succeeded in reducing this abscess, as well as the one on the buccal root. My roots were now filled with gutta-percha, the larger part of my crown-cavity with amalgam, the remainder with gold.

We, all three, were quite proud of the work, feeling that it would stand for many years. But in less than two years' time, a peculiar blue line, and then a space, began to appear around the gold at the cervico-buccal margin. We called Dr. Three's attention to this condition. He explained that a mistake had been made in filling a part of the cavity with amalgam. He thought, however, that he could "fix" it. That is, by means of celluloid strips unsparingly applied, he endeavored to "out damned spot!" but it would not out.

In 1882, I began to crumble away around the gold, and presented a very battle-scarred appearance.

In 1883, a classmate of my owner's took out the crown-filling and replaced it with gutta-percha. This having in time yielded to wear, our wife filled me with gutta-percha, capped with amalgam, to serve as a protective grinding surface. Owing to the good lady's not having a thorough knowledge of the mechanical principles involved in the retention of a filling, the amalgam cap, after two months' good service, loosened and dropped out. In the meantime, my palatine Vesuvius had again become active.

Toward the close of 1884, a serious accident befell me. As stated above, my crown-filling had come out, and I looked more like a hole than a tooth. My former self was now represented by reduced buccal and palatine walls, and a full distal wall—all dangerously thin. Notwithstanding this weak condition, my owner used me indiscriminately on soft and hard food. One day I encountered a hard crust of bread, and was split! The fracture extended vertically through the middle of the distal wall; running up under the gum about a quarter of an inch, it turned forward across the palatine root, and ended at the mesial aspect of the cervix.

Of course I was at once placed on the retired list. My owner was on the point of having me removed because of offensive partisanship, as the movements of the palatine fragment had begun to irritate the soft tissues,

when he thought of Dr. Four. We at once went to the doctor and asked if a Sheffield crown could be engrafted upon me. Dr. Four has a dental diploma. He thought that I was an excellent case for a crown. Accordingly, he cut off what was left of me, even with the gum, and fitted to my bi-partite stumpship a gold crown, porcelain faced. The fitting of the gold band which was forced up the sixth of an inch under the gum, proved in my split condition to be anything but a painless operation. However, we determined to test the virtues of a "Sheffield," at any cost. I was sure that I could stand it if my owner could. Before finally adjusting the crown, the doctor examined the palatine root, and said *that it had been improperly filled*. He therefore removed the gutta-percha and drove into the canal a taper of orange-wood soaked in carbolic acid. I then received my crown, which was truly a thing of beauty and utility.

Unfortunately, a few days after the coronation ceremony, my palatine root once more caused an abscess. Hoping that this might be resolved by Nature's kindness, we did not immediately go back to Dr. Four. Waiting some weeks in vain for a cure, we concluded to let the doctor treat the abscess. He lanced it freely, and inserted iodine on a cotton tent. This was to remain in until healthy granulation would push it out. The tent was ejected on the following day by pus. My owner, not finding it convenient to see Dr. Four, put into the fistula a plug of cotton soaked in a mixture recommended by Dr. Litch, of Philadelphia:

R. Iodinii (crystals).
 Acidi carbolic (crystals), aa ʒj.
 Alcoholis ʒij. M.

On removing the plug two days afterwards, the doctor found that a healthy growth of new tissue had formed at the bottom of the fistula.

Up to the present time of writing, nearly a year after the operation, I am perfectly comfortable, and thanks to the skilfully conservative treatment of Dr. Four, am now rendering most excellent service as a grinder. My crown is looking well, and stands service admirably.

The next event in my career, I fear will be the last. My owner thinks I will last three or four years longer, and then I must yield to the forceps. With due deference to his opinion, I cannot help observing that, inasmuch as I have for almost a year done all kinds of dental work, and have suffered no injury, I feel that I am good for six or eight years more. In fact, I feel that I shall remain in office as long as my alveolar constituents will support me.

In conclusion, I will say that though I have been cruelly wronged, I am now at peace with the world. To my owner I have served as an expiatory sacrifice for his neglect; to dental science I serve not only as a warning example of maltreatment, but as an emulable example of dental conservatism.—*L. C. F. H., in Southern Dental Journal.*

THE OLFACTORY FUNCTIONS IN RELATION TO
DIAGNOSIS.

BY DR. ALFRED S. GUBB,

Resident Medical Officer, French Hospital, London.

This subject, although a matter of daily involuntary observation, is one which merits a more scientific treatment than has hitherto been accorded to it. Possibly to the fact that the majority of these odors are of a more or less distinctly disagreeable nature this neglect is to some extent due. The subject is one replete with interest, even from a purely physiological point of view, but it acquires quite another importance when viewed from a pathological standpoint. Individuals living more in a state of nature, or who for some reason are more dependent on their senses, such as savages, Indians, or blind people, have always made a—to us—wonderful use of their sense of smell, which has attained with them an acuity of perception which we can scarcely conceive. Animals, too, having no pre-occupations beyond that of exercising their senses, obviously attain a far higher pitch of sensitiveness than man, and the enjoyment they derive from it is presumably great in proportion. The wine merchant, the tobacco importer, and the tea merchant, etc., all attain great delicacy of perception, without which their commerce would be difficult indeed. Why, then, should the modern scientific physician neglect an organ which, if properly trained, is enabled to furnish information at least equal to that furnished by any other sense. It cannot, of course, be pretended that absolutely no use is made of it at the present time, most medical men having remarked the peculiarly offensive nature of the excreta in dysentery, and of the breath in certain derangements of the stomach, but still these are gross forms requiring no delicacy of sense or education to appreciate. Again, it is worth remembering that we are enabled by means of the sense of smell to detect substances in the air, in quantities so small as to escape notice by any of the other senses, and defying the powers of the analytical chemist. Nor are the pertinacity and range of this perceptive power less remarkable—the recollection of a particular smell will often outlast any other impression left on the senses. So a practised perfumer is able to retain and distinguish between as many as two hundred different perfumes in his laboratory.

Now that we have come back definitively to the axiom of Hippocrates, *medicina toto in observationibus*, so valuable an auxiliary deserves more than a casual attention.

One of the first conditions for the proper use of the olfactory apparatus is, as the ancients laid it down—*vie bene munctæ naris*—and certainly not

less important is an intelligent education of the sense. Just as constant practice places an eye, so to speak, at the extremity of the finger of the gynæcologist, so constant observation will sharpen and define the sense of smell in those willing to cultivate it. The cutaneous odors, for instance, vary considerably independently of disease, not only in the different races of man, but also in individuals of the same race and even of the same sex; nevertheless, they may be considerably modified, consequent on the ingestion of certain drugs, such as sulphur, or in consequence of certain diseased conditions, such as rheumatic fever or variola. So marked is the variation from the normal in the two latter diseases, that an average practitioner could diagnose the disease in certain stages by the smell alone. The same remark applies to typhus fever, and very markedly to the condition of uræmia, or inflammatory mischief after childbirth. The difference between the sweetish, somewhat insipid odor of the healthy lying-in room, the *gravis odor puerperii*, and the acrid, disagreeable odor when the lochia have become modified, is marked and peculiar. The cause of the acid smell in acute rheumatism has been generally attributed to the presence of lactic acid in the sweat, but lactic acid has no odor of its own, and here, as elsewhere, the odoriferous properties are attributable to one or the other or several of the fatty acid group, either excreted as such or the result of the transformation of the cutaneous secretion as a whole. Certain ill-understood changes occur in, or may be peculiar to, some unfortunate people, whereby the normally insipid odor of the skin is exchanged for one which may be horribly offensive, and this may be general or limited to certain parts of the body.

The breath, again, is subject to variations in disease generally as pronounced as they are disagreeable. The horrible odor of the breath of the patient suffering from typhus was remarked long ago. Lucrece says:—

“Spiritus ore foras tetrum volvebat odorem
Rancida quo perolent projecta cadavera ritu.”

In typhoid fever the breath is often fetid, but is then very likely due to the state of the mouth. Sulphur taints the breath with sulphuretted hydrogen, while copaiba and alcohol both tend to compromise the person whose breath betrays their use. In diabetes the breath possesses an odor of fermentation, while in uræmia it is distinctly ammoniacal, and is sufficiently pronounced to serve often as a warning of the peril.

Dyspepsia again, especially those forms attended by some irregularity of the normal fermentative action, tends to render the breath execrably fetid, and the presence of the ascarides in children is said to give rise to a garlic-like odor. The breath is, of course, much modified in its passage through the mouth or nose by the state of these passages. In ozæna, the breath, when expired by the nose, is insupportably fetid, and decaying teeth or ulcerative stomatitis produce the same effect when expired by the mouth.

The urine, also, is remarkably susceptible of change in this respect. The "new-mown hay" smell of diabetic urine, and the ammoniacal smell of the urine in cystitis are gross examples of the fact. The pronounced odors resulting from the taking of copaiba or cubeb; the violet odor produced by the ingestion of turpentine, or the characteristic effect of a meal comprising asparagus, all show how direct is the connection between ingestion and excretion.

The stench evolved from persons suffering from anything approaching starvation is also very remarkable, and has been attributed to the premature decomposition of the ill-nourished tissues. The odor of discharges is often perfectly characteristic; pus from the neighborhood of the intestines having the well known fecal odor, and that from carious bone, if not fecal, is none the less peculiarly offensive. The pestilential effluvium of carcinoma anywhere, and particularly of the uterus, is one of the hints to diagnosis that even a tyro could scarcely ignore. The subject, as we have said, is a rich one, and will well repay systematic research. Although not every one is prepared to do the drudgery of the work, all would be willing to appreciate and utilize definite information as to the precise changes that are concerned in the production of these changing yet none the less characteristic odors.—*The Medical Bulletin.*

THE CERVICAL EDGE.

BY J. SMITH DODGE, JR., M. D., D. D. S.

May it not be that the mysterious tendency to decay at the cervical border of fillings is largely due to defective trimming? Since I formed the habit of testing every proximal filling by passing floss silk between the gum and the neck, and drawing it along the tooth towards the free edge, I have been continually surprised to find how difficult it is to obtain perfect smoothness at the cervical border. Now, any abrupt projection of the filling at this part will promote decay in two ways. It will make impossible the perfect removal of fibrous food, and it will produce that acid secretion from the mucous surface which has been shown to follow prolonged irritation of the gums.

The conjecture that this is a frequent cause of cervical decay is strengthened by considering the difference of filling materials in this respect. Did anybody ever see recurrent cervical decay beside a gutta-percha filling? Certainly, very seldom; while fillings of oxy-chloride or phosphate permit it readily. Now, gutta-percha is so easily trimmed with a warm spatula that it is almost certainly well finished at this point.

And if it is not, gutta-pursha has no irritating effect on the gum, and is so flexible that it will much less firmly retain foreign particles, in both which respects the mineral fillings named are greatly different. Then again, consider the well-recognized contrast between fillings of soft foil and those of cohesive gold. It was very rare that one found cervical decay by a well-made soft-foil filling, while it has from the first been the besetting sin of cohesive gold. May it not be because the projecting mass of soft foil yields so readily to the customary stroke of the flat bur-nisher between the teeth, that no abrupt projection is left? It is certain that since the matter took this shape in my mind (several years ago), my gold fillings have been almost exempt from cervical failure.

But perhaps the strongest confirmation is found in teeth filled with amalgam. How many teeth have I seen, in the mouth or out, with large amalgam fillings sharply projecting where the cervical wall had been, but flanked on that side by a great and fatal chasm. Of course, such an edge of amalgam, once well hardened, presents exactly the conditions for retaining food and for constantly irritating the gum. Any dentist who investigates this for the first time will be surprised to find how naturally, almost inevitably, a filling finished with spatulas projects at the cervical margin. But since I adopted the use of silk for trimming next the gum, my amalgam fillings have in hardly an instance permitted secondary cervical decay.

My object is not to present this as the complete explanation of cervical failure, but to suggest that this may be the reason why many fillings, otherwise thoroughly good, prove insufficient at this critical point.—
Independent Practitioner.

A NECKLACE OF MUMMY EYES.

The material for a unique necklace is now in the hands of Messrs. Tiffany & Co., of New York, and is awaiting the attention of their workmen. It consists of a large collection of very beautiful mummy eyes, which were brought from Peru by Mr. W. E. Curtis, of the South American Commission. The majority of them came from Arica, where large cemeteries are filled with mummies of the ancient Incas.

Some little discussion has occurred in scientific circles as to whether they are mummified human eyes or those of some variety of fish, which had been substituted by the Inca embalmers on account of their less destructible nature. Mr. Curtis writes us that the local antiquaries from whom the eyes were purchased believed them to have belonged to a species of cuttle fish which was common on the Peruvian coast.

On the other hand, Prof. Ramondi, the most distinguished native ethnologist, maintains that they are really human eyes, and the Superintendent of the Ethnological Branch of the British Museum quotes Dr. Tschudi, of Vienna, a friend of Humboldt and a thorough student of Peruvian antiquities, as likewise supporting this theory. Since the eyes have been in this country they have been examined by Mr. G. F. Kunz and by several of the gentlemen connected with the Smithsonian Institution, and they seem to agree in pronouncing them to be the crystalline lens of the eye of a cuttle fish or squid. They vary in size from 5 to 18 millimeters in diameter, and are therefore considerably larger than the lens of the human eye. Their excellent preservation would also seem to disprove a human origin, for the lens of the human eye is very perishable, and can with difficulty be preserved even a few days. The custom of embalming, which was so common among the Incas, was made very easy by the warm, dry climate of Peru, and it is stated that the embalmed were often simply placed in a sitting posture on the vast niter beds, and left exposed to the open air. For years after death they were visited by friends and relatives, and it was consequently important that the semblance of life should be maintained as perfectly as possible. Hence it was that the dried cuttle fish eye, which is almost indestructible, and possesses sufficient warmth and fire to partially simulate life, was substituted for the human organ.

So common are these mummies that they can be dug up almost anywhere, or can be purchased for four or five dollars apiece. In the rough state, the eyes are of a bronze yellow color, and quite opaque, but when the outer covering or skin is removed, and the inner lens carefully polished, it becomes translucent or even semi-transparent, and shows a handsome coloring varying from yellow to orange and reddish brown. In this form it makes a very beautiful gem. The concentric arrangement of the different layers gives the eye the appearance of iridescent glass, and produces an effect similar to that formed by placing a series of minute crystal globes one within the other. Some of the less perfect specimens have also radial cracks, which add to the refractive power of the lens, but will probably detract from its durability. The crystalline lens of a squid possesses so much solid matter that, when removed from the eye, it becomes hard and dry in a very few days, and has a milky, opalescent appearance. Those taken from the mummies had been cut in two pieces, so as to expose the cross section. It is supposed that the darker and richer tints found in them are due either to an organic change within the eye, resulting from age, or to the absorption of juices or antiseptics from contact with the body.

The work of polishing the eyes has been interrupted by the illness of several of the lapidaries, which is attributed to poisons used in preserving the eyes. Opinions differ as to what the poison may be; some of the

symptoms would indicate arsenic, but the opinion has been advanced that it is due to some alkaloid generated by the decomposition of the organic constituents. As no chemical analysis has been made, it is not yet possible to assign any definite cause for the illness of the workmen. It was sufficiently severe, however, to produce an unwillingness to resume the task, and for the present nothing is being done.—*Scientific American*.

AMALGAM SOLVENTS.

BY DR. W. D. MILLER.

The question of amalgam solvents raised by B. H. Teague is of sufficient interest to justify the presentation of certain observations which I have made in this direction. I am so situated that I have abundant opportunity to examine fillings of amalgam as well as of other materials, from almost every part of the world, and I have found one class of amalgam fillings, and only one, which invariably shows a disappearance of material from the surface, and sometimes so rapidly does the process go on that in five or six years the teeth require refilling. These fillings all contain copper, and as far as preserving teeth is concerned, they are vastly superior to any fillings of amalgam that I have ever seen. We constantly see fillings made of the finest modern amalgams, and inserted with great care, so imperfect that a good-sized excavator may be inserted between them and the walls of the cavity, but with the class of fillings above referred to, this does not occur. The fillings are absolutely black or *reddish* black, as hard as glass, and very brittle. On the grinding surfaces the material disappears very rapidly, so that in a few years often only a trace of amalgam will be found at the bottom of the cavity, but in all cases it clings to the walls of the cavity as though it had been melted and poured in. I never hesitate to fill up such cavities, over the amalgam, with gold. It makes an excellent foundation, and by its antiseptic power prevents the appearance of secondary decay. The idea that the two metals would give rise to disturbances in the pulp has no foundation, either in theory or practice. The cause of the washing away of these fillings is to me unknown; the fact, however, that it takes place more rapidly on the grinding than on the approximal surfaces, would seem to indicate that the friction produced by mastication may possibly be one of the factors at work in bringing about this phenomenon. It is, however, certainly not the only cause, since fillings on the approximal and buccal surfaces undergo the same change, though in a somewhat slighter degree.—*Independent Practitioner*.

NEW YORK ODONTOLOGICAL SOCIETY.

Extract from Proceedings, in *Dental Cosmos*.

President Jarvie. Gentlemen, we will now hear from Dr. John A. Wyeth in regard to some operations upon the mouth and jaws.

Dr. Wyeth. Mr. President and gentlemen, when I was invited to come here and present some cases of surgical operations upon the mouth and jaws, I looked over my note-book of the last twelve months in order to select some typical cases of lesions of the palate, tongue, upper or lower jaw, that might interest you, and I will briefly report eight operations. I shall not take up much of your time, as I desire you to look at the cases rather than to be talked to about them, because with respect to diseases of the buccal cavity you undoubtedly know as much as I.

Case I. This young lady, nineteen years old, had a congenital cleft in the palate, and grew up with a bad articulation and faulty pronunciation, her speech having the nasal sound or twang so common in these cases. When I first saw the patient, last April, the hydrochlorate of cocaine was being introduced as a local anæsthetic, and I determined to try it in her case. With a camel's-hair brush I applied a four per cent. solution every five minutes for half an hour, painting it upon the edges of the fissure and over the entire arch of the palate and fauces. Complete anæsthesia of the parts was obtained, and a greater degree of toleration in the muscles of the palate than I have ever been able to get with other anæsthetics. We know that the reflex movements of the palate cannot be completely controlled in ether or chloroform narcosis, but in this instance, with the patient's volition aided by the cocaine, the control was perfect. The patient held the tongue-depressor, and was of great service to me and Dr. Wardwell, who assisted. The edges of the cleft were freshened, the sutures introduced and tied, and the palato-glossus, palato-pharyngeus, and levator palati muscles of either side were divided. In cutting these the patient experienced some pain, because I was working outside of the zone of local anæsthesia. The union was perfect—as you see!

Case II. was almost analogous to this, excepting that it was complicated with an osseous fissure, for the closure of which the periosteum was lifted and slid to the median line and sutured—the result being union throughout.

There are some men in your profession and in mine who are doing good work in remedying these deformities of the palate, and I may state that there is considerable difference of opinion between them in regard to the propriety of the operation. I have only operated upon two patients for cleft palates, and those were during the last twelve months. Both operations have been successful; and while I do not claim any great

credit for success in this branch of operative surgery, there is one feature in connection with these cases that encourages me, and that is the improvement in articulation. When I first spoke with this little woman I could not understand one-tenth of what she said. Now I can understand everything she says; and her friends, who are better able to judge than I, appreciate the fact that there is a marked improvement in this respect.

I will finish this subject by showing you these instruments, for which we all are indebted to a member of your profession—my good friend, Dr. Goodwillie—and I consider them the perfection of instruments in the surgery of the palate. The fact is that, if I have stolen his thunder, I have armed myself with his instruments, and tried to get some credit by using them successfully.

Case III. This man I operated upon a week ago to-day, in my ward in Mount Sinai Hospital, for cyst of the antrum. Two years ago he first had pain in the region of the antrum of Highmore, and went to some dispensary, but was not treated particularly for that, and it went on until July last, when he came into the hospital. A colleague of mine made a puncture in the antrum of Highmore in front of and above the anterior upper molar that discharged a little fluid very much like the white of an egg. His diagnosis was a cyst of the antrum of Highmore, but he did nothing more at that time. The disease progressed, and gave the patient a great deal of annoyance and no little pain. A week ago the patient was etherized, and I made an incision from the corner of the mouth to the angle of the jaw, passing parallel with and below the duct of Steno. I then extracted the two bicuspids and with a gouge removed a portion of the anterior wall of the antrum. The cavity of the antrum was then packed with iodoformized gauze. The wound in the cheek was united by first intention. My hope was to destroy this cyst by the process of inflammation. If this primary operation does not succeed, I will have to remove a greater part of the upper jaw and dissect out the cyst-wall.

Case IV. was that of a lady twenty-three years old, who had had an abscess in the antrum of Highmore for thirteen years. I drilled into the cavity through the place from whence the anterior molar had been extracted, and found pus. The cause of the abscess was found to be an extra tooth lying loose in the antrum. I removed it and the patient was rapidly cured.

Case V. was that of a boy six years old, with necrosis of the left lower jaw near the angle. A large piece of bone was removed and a cure effected.

Case VI., I think, is one of more interest to you. This boy came under my care a year ago. He had at that time a little tumor growing upon the anterior part of the alveolus, which was suspected of being a sarcoma, and

upon examining a little of it under the microscope I found it was. The little fellow was anæsthetized, and I split his lip down through the median line; made an incision around to the angle of the jaw, and removed about two inches of the bone. What is astonishing to me, and anatomically interesting, is the fact that the opposing parts of the upper and lower jaws are in perfect line, and in masticating he brings the upper and lower teeth together, although no prosthetic apparatus has been inserted.

Case VII. This young man had a tooth extracted from the left side of the lower jaw in 1883, and soon after that an abscess formed just opposite the point where the tooth had been extracted. Six or eight months after the tooth was removed he called upon me to treat the abscess, which had been opened. All I did at that time was to put a dressing on it and send him to the country. When he returned the abscess was entirely healed, and it gave him no further trouble until about six weeks ago. A month prior to that date he noticed that a swelling was occurring in the same place as before, and by the time he arrived in New York City the second abscess had opened spontaneously. Last week I etherized him, and cut out all the diseased tissue. I went down to the bone, not doubting that I would find an abscess cavity in the lower jaw; but although I exposed the bone in front and back of the place where the tooth had been extracted, I did not see a sign of necrosis.

Dr. Abbott. What tooth was extracted?

Dr. Wyeth. The anterior molar.

Dr. Abbott. How old is the patient?

Dr. Wyeth. Twenty-one.

Dr. Abbott. Had he ever lost a tooth from that side before?

Dr. Wyeth. He says not.

Dr. Abbott. There may be a wisdom tooth back there, doctor.

Dr. Wyeth. I think not. I examined the jaw thoroughly.

Case VIII. was a man from Western New York who came under my care a year ago for tic-douloureux in the left inferior dental nerve. I trephined the jaw at the angle and extracted a half inch of the nerve. The patient was immediately relieved, and at last accounts was well.

Dr. J. Morgan Howe. Mr. President, I have been very much interested in the presentation of these cases by Dr. Wyeth, and I feel like asking a great many questions regarding them, but will limit my queries to one or two on the subject of cleft palate. The doctor says he has operated upon but two cases, but I am sure he must have studied the subject a great deal, judging from the beautiful results, surgically considered, that we have witnessed to-night. Will he kindly tell us of his experience with regard to the degree or amount of improvement in speech? I believe none of us heard this young lady speak; and I would like to ask him how much improvement there is, how much may be expected, and what estimation

he has for these operations, as a remedy for the defect of speech incident to cleft palate ; also, whether there are any indications that would contra-indicate operations for cleft palate. I think the doctor can enlighten us some if he will be so kind as to give us his ideas on this subject.

Dr. Wyeth. In regard to indications for the operation, my experience is, as you know, very limited, and I am not really *au fait* in the mechanism of the subject. I think there is great justification for operating when the cleft in the palate causes regurgitation, and the food and everything that is swallowed creeps through the pharynx and along the passages of the nose. It is not a pleasant thing for people to eat through their noses, and this is what some of these unfortunates do. Another justification for operating is found in the improvement in speech. I believe, from the cases I have seen, that there is much less indication for procedure in the case of a child that has past the second year of life than before ; for if it can be done before that age they learn to articulate better, as in cases of later operating the patient has to unlearn the bad articulation they have acquired. The only contra-indication is the danger to the patient's life during the operation. If I thought I was endangering the life of a person, I would let him eat through his nose as long as he lived before I would take up the part of his executioner.

Dr. Abbott. Is there a point at which you would advise the putting in of an artificial appliance rather than operating ?

Dr. Wyeth. I do not think there is, doctor ; but when I say that, I do not speak by the card. My friend Dr. Kingsley knows more about that in a minute than I would know in a century, and I would prefer to take his opinion in regard to artificial apparatus. I think I have never heard a person for whom he had made an artificial apparatus speak ; but I am so well satisfied with what I have done with these instruments of Dr. Goodwillie's that I am going to use them as long as I can get victims.

Dr. N. W. Kingsley. Mr. President, I am sorry the gentleman who just sat down made that last remark. I had hopes that, upon seeing better results in the treatment of cleft palate than he had obtained in his two cases, he would change his mind, and rarely if ever operate again. But to say that because one of my confrères has invented some instruments which enable him to accomplish an operation easily (and, by the way, I think it little credit to the gentleman that he ever invented those instruments) ; to say that because these instruments have been invented he is "going to use them as long as he can find victims," shows that he is not open to conviction. This subject and this meeting to-night has for me a peculiar interest. We meet for the first time under the roof of the Academy of Medicine, and we have had presented to us one case and have heard described another of the treatment of cleft palate by surgery ; this conjunction of subject and place is particularly interesting to me,

because I recollect that nearly twenty-five years ago, before this same Academy of Medicine, I presented two patients who had extensive cleft palate, who were then wearing artificial apparatus, and whose speech was absolutely perfect. I then described not only my method of restoration, but I gave the reasons why, up to that time, a surgical operation had invariably failed to benefit the speech to the extent of producing perfectly natural articulation. The reasons I gave were based upon the philosophy of the mechanism of speech, and were founded in science; they were accepted by the gentlemen then present and they were after that indorsed by the most distinguished members of the profession in England and in France, and I think that, with few exceptions, they have been accepted and indorsed ever since. Only within the last month I received a letter from a distinguished professor in a German university, in which he stated that he had only recently seen a monograph of mine upon the mechanism of speech, telling me, among other things, that my investigations, which he regretted he had not heard of before, were far in advance of those made by any other scientist. There was nothing new in that monograph. I had given the same information over and over again; and to-day the most mortifying thing to me is to see that, although I have announced these principles repeatedly, and they have been promulgated many times, and published in nearly every language that has a surgical literature, it has been to so little purpose that we still hear, as we have heard this evening, professional men say they are not familiar with the mechanism of speech. Bear with me while I briefly re-state those principles. The natural palate hangs to the posterior edge of the palatine bone, a membrane or curtain which moves up and down. One of its offices is, by its elevation, in conjunction with the contraction of the pharynx, to close the passage to the nares. Another function is, in conjunction with the tongue, to close the passage through the mouth. Articulate speech, as we understand it and as we hear it, must of necessity come from a perfectly-formed natural palate and the perfect performance of its functions. If it be split, if it be too short, or if in any way it is unable to perform all its natural functions, speech will be imperfect, and always must be imperfect, so long as the palate is defective. You cannot get perfectly natural articulate speech from a defective palate. My friend will say, in answer to that, that the palate of the patient he brought before us this evening was not defective, because he had made it perfect. He has made it perfect in appearance, by drawing the sides of the membrane together and getting a good union down to the uvula. It is as good an operation as I ever saw, and I have seen scores of them. My observation has not been confined to one or two cases. I say it is impossible, in the very nature of the circumstances that exist, to bring the sides of the fissure together and have the palate long enough to reach the posterior wall of the pharynx. I have never

seen a case yet where that was done. Drawing together the sides of the membrane makes it short at the back. The patient exhibited here to-night showed exactly that condition. I wanted to get her to speak or read aloud to us, and she spoke in a low tone and said "Not to-night." In speaking those two words there was the same escape of sound through the nasal cavity that my ear has become accustomed to detect. If I had not been told she was a cleft-palate person I would have known, simply by the articulation of those two words, that her palate was defective. It is true probably that she finds it easier to speak now than it was before, and she may speak some syllables better, but what we are seeking for is a perfectly natural articulation—perfectly natural speech, from hearing which no one would suspect there ever was a defect in the palate.

When my friend was asked to state the objects of operating in these cases, he gave as one of the prominent objects the improvement in deglutition. I had that idea once, getting it from the books, but I questioned my patients, and they all told me they had no difficulty whatever in swallowing. Among them have been some of the most extensive congenital clefts to be met with in any practice. One gentleman came to me with a fissure in the roof of the mouth so large that he could stick his tongue out through his nostrils for half an inch. I asked him if he ever found any difficulty in swallowing. He said he had none at all; he never thought of such a thing. The explanation is this: Difficulty in swallowing occurs in infancy, but long before patients have reached years of maturity they have learned to manage their food and accommodate themselves to the circumstances, and deglutition is not interfered with to such an extent as to justify an operation, no matter how simple it may be. But to go back to the difficulty of articulation. As I said a few moments ago, *upon a thorough understanding of the mechanism of speech is based the whole idea and object of any treatment of cleft palate.* There is a possibility, as has been suggested by our friend, that if the operation is made in the earliest years of the patient's life, with the growth of the patient and the development of all the surrounding parts, especially with the stimulus he would get from the effort to articulate, the newly-formed palate may be increased in length, and a fair articulation made possible. My experience in meeting patients who have been operated upon by surgeons for cleft palate is such that, I think, if my friend had the same experience, he would do as did our lamented friend, Prof. Little, who came before us a few years ago, and who died this last year. Dr. Little had been operating for cleft palate. We spent an evening together discussing the mechanism of speech, and subsequently he said to me, "I will never operate for cleft palate again." And he never did. The surgeon sometimes defends his operation by saying that, "if it does no good, neither will it do any harm," but that is not true, because a successful

surgical operation prevents any other method being adopted without undoing the results of the operation.

I would like to mention two cases, typical of many that I have seen, which have presented themselves within the last three months. A mother, a widow, came to me with her only son, a young man of about twenty years of age, to whom she had managed to give as good an education as he could acquire in the difficult circumstances in which he was placed by reason of his defective speech. She had gone to a surgeon about three years before and had his cleft palate operated upon. There was a good union, just as good as we saw here to-night, but his speech was not only no better than it was before, but his mother said (and the tears ran down her face as she said it), "I believe it is worse; and when I think what my son has suffered I cannot recall it without shedding tears. What can you do for him?" I answered, "Nothing at all." "But I have been told you can treat these cases, and bring about perfect articulation." "I cannot in this case." "Why not?" "Because the surgeon has sewed it up and put it out of my power." "Has he got to go through life like this?" "I think he has; I do not feel at liberty to cut it open."

Another young gentleman I took before the post-graduate school in July. He was a graduate of Yale College five years ago. At the age of seventeen or eighteen years he had his cleft palate sewed up by a surgeon in Baltimore, and it also was an excellent operation, excepting a small opening at the apex of the fissure, which was covered with a plate; but he could not speak any better than he did before. He said the defect in his speech prevented him from doing business, and he must have something done. The real difficulty, like all the other cases, lay in the palate being too short behind. I made a little apparatus to go across the roof of the mouth and pass through this opening, going over and down behind the palate, with a little flexible extension which simply elongated the palate and enabled a closure to be made when the palate was elevated. I was requested to give a lecture before the post-graduate class upon this subject, and I placed the instrument in the fissure for the first time before the class, and we heard him read from a newspaper. The change was very marked; his speech was almost perfect even then; and it was rather astonishing that it should have been. I have constantly to disabuse people's minds of the idea that speech comes at once from the introduction of the instrument. The patient must learn to use it before great improvement in speech can be expected. In the artificial apparatus they have the means of speech, and when they have learned to use it the desired effect will be produced. By a surgical operation they do not get the means to make perfect, natural speech. There is where the difference lies between us. There are few members of our own specialty who cannot plead ignorance as a justification for their operations upon cleft palates. They have

heard the principles explained too often, have seen them illustrated, and know the true science of the subject. I can forgive a surgeon who comes before us and honestly says he does not know of these things when I can't forgive one of my own confrères.

Dr. Wyeth. I shall be very glad to see any of Dr. Kingsley's cases, and if after so doing I am convinced of the better results claimed for the mechanical over the operative treatment, I shall adopt it, but until that is thoroughly done I shall continue the practice and teaching of the men who have made the closure of cleft palate a triumph of surgery.

Dr. Abbott. Inasmuch as Dr. Wyeth was so kind as to present a number of cases here this evening, some of them of a very interesting nature indeed, I hope to have the opportunity, at some future time, of reviewing them, particularly those relating to the treatment of diseases of the antrum. I feel delicate about doing so to-night, as the time for adjourning has arrived.

Dr. Lord. Mr. President, we are certainly very much indebted to Dr. Wyeth for the very interesting discourse he has given us this evening, and for his trouble and kindness in bringing these cases to our attention. I am sure that all are pleased to join in giving Dr. Wyeth a most hearty vote of thanks.

President Jarvie. It gives me great pleasure, I assure you, to tender the thanks of this society to Dr. Wyeth for his presence here and for the presentation of these very interesting cases, which he has done certainly with considerable trouble to himself and to his patients, to whom we are under obligations also. I trust that Dr. Wyeth will be with us at some future time, when we can discuss the subject of diseases of the antrum.

Dr. Wyeth. I thank you very much, Mr. President, for this courtesy. I consider it a great honor to be invited to come before you. I think the relations between your profession and mine should be more intimate; that we should be better acquainted, professionally and fraternally, than we are.

President Jarvie. I want to say to our friends and guests that it is our custom, when cases are presented here, to discuss freely their merits and supposed demerits; and that we are discussing the cases and the methods followed, not the gentlemen who presents them. I have also to say that, owing to the lateness of the hour, the reading of Dr. Brockway's paper will be deferred.

A SPECK on a saucer of mercury resting on the ponderous foundation stone of the Harvard observatory was observed, by the aid of a microscope, to move one-five-hundredth of an inch as the result of the recent explosion at Hell Gate. Thus a stone that had been regarded as immovable even by an earthquake, was perceptibly influenced by an artificial explosion 190 miles distant.

MATERIALS FOR FINISHING AND POLISHING FILLINGS.

BY C. F. W. BODECKER, D. D. S., M. D. S.

The best filling, unless great care has been exercised in finishing, may result in a failure, especially when situated upon the proximate surface of a tooth. With most of the appliances in use to-day, to obtain the desired result involves a great deal of patient labor. In dressing down gold fillings, small shellac corundum points are very serviceable, but as soon as an instrument made of this material is small enough to reach all the depressions upon the teeth, it readily wears out or breaks. For the proximate surfaces, sand, emery, corundum, etc., fastened upon paper, cloth, or celluloid, cut into strips or disks, have been employed, but with some difficulty, as the polishing materials are held upon the paper, etc., mostly by glue, and the cutting surface is destroyed as soon as it comes in contact with the saliva. Although an application of an alcoholic solution of shellac to the sand or emery paper will materially improve its durability, yet it remains a very disagreeable and sticky material to handle in the mouth, unless it can be kept perfectly dry.

Besides these, there are several other appliances, viz.: Brown's polishing silver strips, copper strips, wood shavings, etc., but neither is free from objections. Not satisfied with these materials, and desirous of obtaining something better, Dr. Wm. Herbst, of Bremen; Dr. Franz Berggren, and Dr. E. Förberg, of Stockholm, have largely experimented in this direction, and in certain appliances have made considerable improvements, which deserve the acknowledgment of the profession.

It is well known that points and disks, made of black rubber and corundum or emery, have been used many years, but they cannot be obtained from the dental depots (as is understood) on account of a pending patent law-suit. But every dental practitioner may easily prepare them for himself, and better ones than can be bought at present. For this purpose take one part of ordinary red rubber, and two parts of corundum or emery. Warm the rubber upon a water bath, and gradually knead the corundum or emery into it, so that it is evenly distributed throughout the rubber, which is then flattened out so that it may be readily cut. Take button moulds, or points made of wood, of the required size and shape, fasten them with wax upon the ends of worn-out engine burs, insert them into an ordinary deep rubber flask, head upwards, in such a manner that the upper surfaces of the points are exposed, and pour the counterpart. When the plaster has set, open the flask, remove the points or button moulds from the mandrels, and after they have been cleaned perfectly

with boiling water, pack a little ordinary red rubber in the center around the mandrel, and fill the rest with the rubber impregnated with corundum or emery. Then close the flask and vulcanize in the usual way. When the points are vulcanized they are, while rotating in the engine, shaped upon a coarse file, and then immersed in nitric acid from two to six hours, according to their thickness. But precaution must be taken to apply a thin coating of wax all over the mandrel, else the acid will dissolve the steel. When hard rubber, corundum or emery points are treated in this manner, the nitric acid dissolves the outer layer of the rubber, leaving the corundum or emery intact, thus exposing a cutting surface superior to the best ordinary corundum point, or sharp steel bur, and a great deal more durable than either. (Dr. Wm. Herbst.)

Soft points and disks may be very easily made of ordinary velum rubber impregnated with powdered pumice, but as the soft rubber cannot well be fastened upon a mandrel, a hard center may be put into it in the following way: With a punch cut the disk out of a sheet of velum (soft) rubber, and out of this disk remove the center by means of a smaller punch. The center is replaced by a piece cut out of a sheet of unvulcanized hard rubber. The disks or points are then closely wrapped in tin foil, put in the flask, vulcanized, mounted, and trimmed upon coarse sandpaper while rotating in the engine. (Dr. Berggren.)

To prepare disks that will withstand moisture, take a piece of strong, thin linen, and a piece of sand or emery paper. Varnish both with a rather thick solution of shellac in alcohol (the paper upon its sanded side), bring both together, and keep them under a press for three days. Then immerse in water, when the paper will be found to separate from the linen, leaving the sand or emery held by the shellac upon the linen, out of which the disks are stamped. (Dr. Wm. Herbst.)

Durable paper disks, with emery or corundum, may be prepared by coating thin cardboard (without gloss), as postal cards, with a thick solution of shellac, and sprinkling the thinnest possible layer of corundum or emery upon it, out of which, when perfectly dry, disks may be cut. (Dr. Förberg.)

To make disks of thin rubber cloth, to be used with advantage for polishing with powdered pumice or chalk, take two pieces of rubber cloth, as obtained in the rubber stores, coat them with a rather thick solution of shellac in alcohol, and immediately bring them together and keep them under a press for about two days. When thoroughly dry, the sheet may be cut into disks by means of a punch, and when mounted upon a screw mandrel they can be made quite thin by holding them, while rotating in the engine, upon a piece of sandpaper. A variety of thicknesses of rubber cloth may be employed with advantage, but it is better to cement two layers together, and then use only one thickness of rubber cloth, as the shellac imparts great stiffness to the disk. (Dr. Wm. Herbst.)

For removing surplus filling materials from the proximal surfaces of teeth, a watch spring, upon which a layer of corundum or emery has been attached, is of great service. To prepare this, warm a thin watch spring over a Bunsen burner, or the flame of a spirit lamp, apply a thin coating of solid shellac, and quickly, while the shellac is yet in a fluid condition, immerse the spring into powdered corundum or emery. When perfectly cold they may be used in a saw frame, and will be found more serviceable than thin files. (Dr. Berggren.)

For polishing proximate surfaces of the teeth, ordinary rubber cloth cut into strips, or very narrow velvet braid, will be found to work admirably. Thin chamois leather will probably produce the finest polish, but when narrow strips are used they will stretch out, and tear very quickly. To overcome this difficulty, sew a seam lengthwise in the strip with a sewing machine, which will very materially strengthen it. (Dr. Berggren.)

To prepare tape, which is very serviceable, and which will retain the polishing materials well, take some strong and thin linen tape, of desired breadth, soak in ordinary thin rubber cement for two or three days, then remove it, at the same time scraping off all the surplus rubber cement, and let it dry for about twenty-four hours. The tape is then impregnated by rubbing it with powdered corundum, pumice, chalk or any material that it is desired to use. The rubber cement will hold these substances very firmly in the meshes of the tape, and it may be used under water or saliva without losing its cutting surface. (Dr. Wm. Herbst.)—*Independent Practitioner*.

COCAINE ABUSED.

Like chloral and other of its celebrated but less brilliant predecessors, cocaine must suffer the result of abuses which are the natural sequence of its wonderful popularity and the praises which have been heaped upon it on every hand. Coming suddenly into prominence and being generally recommended for the relief of pain, many people, inspired by glowing accounts in the local press, have made free use of it. It is not surprising, therefore, that some have used too much, and that, among the thousands who have enjoyed the relief afforded by the "angel of anæsthesia," some ill effects should be reported. These reports, as presented by the daily papers, must cause a reaction of popular, if not professional, sentiment in regard to the drug, and cocaine may naturally sink far too low in public estimation before rising to its permanent level.

At a meeting of the Medico-Legal Society, November 18, Prof. R. Ogden Doremus told about a case of fatal poisoning from the application of cocaine to an aching tooth. Dr. F. M. Thomas, a graduate of Bellevue

Hospital, wrote to him about the case from Kansas City and wanted an opinion from the society. On November 3d, Dr. Thomas was called to attend the woman referred to. He found her dying and quite unconscious. The doctor made inquiries and was convinced that it was a case of cocaine poisoning. He sent what was left of the medicine she had been using for her tooth to Prof. Doremus. The professor recognized it as hydrochloride of cocaine, four per cent. solution.

After listening to the facts as recited by Prof. Doremus, and to his explanation of the properties and effects of the drug, the meeting agreed with one exception, that it was a case of cocaine poisoning. Dr. Holcourt said that cocaine should be labeled in drug stores as a poison. Another physician said that he had given a large dose to a cat and it died of convulsions in twelve minutes. Experiments upon animals produced substantially the same symptoms as had been mentioned in the case of the Kansas City woman. It was suggested that in view of the cocaine spray used in General Grant's case, it would be interesting at some future meeting to hear something from the general's physicians on the effects of the drug.

The *Daily Alta Californian* characterizes cocaine in display head-lines: "The Devil's Own Drug;" "Medicine that Changes a Saint into a Scoundrel;" "A Drug which has its Uses as a Local Anæsthetic but withal is an Extremely Dangerous Thing."

The following appears as an interview with an old physician, taken from the *St. Louis Republican*, in which the medical man reports the case of a patient whose depressed spirits seemed to be tending to mental disease. He had used cocaine hypodermically with magical results; the treatment continued successful for a time, but later the melancholy returned worse than before. It was then discovered that the patient had formed the "cocaine habit" and was using the drug hypodermically to her great injury. The physician thinks there is great danger that users of cocaine will form an awful habit.

The reporter remarked: "I thought that Dr. Bauduy had discovered the drug had wonderful effects in cases of insanity." To which the doctor replied:

"It has. Cocaine is valuable. But if you will read what Dr. Bauduy writes in the last number of the *St. Louis Medical Record* you will discover that there is nothing too strong for him to say in reprobation of the abuse of this drug. He describes its effect as a base enslavement of the mind. He describes the phenomena as tending to selfishness and morbid criminality. Indeed he advises that in cases where it is necessary to administer cocaine the patient should never be permitted to find out what has been given, for he describes the cocaine habit as one easy to form, awful in effect, and difficult to cure."—*Drug Reporter*.

The *Druggists' Circular* comments on the dangerous side of cocaine, as follows: But little more than a year ago, the whole scientific world was startled by the discovery of a new use for the alkaloid cocaine that was to completely revolutionize medicine and surgery, the latter in particular. From the well known erythroxyton an alkaloid was obtained which was claimed to be capable of rendering animal beings insensible to pain. Immediately manufacturers prepared large quantities of the article, and ever since experimenters have been busily engaged in proving its properties. While not possessing all the many wonderful properties claimed for it, cocaine to-day ranks among the highest of remedial agencies. Its wonderful local anæsthetic power upon mucous surfaces stamps it as one of the greatest blessings to mankind. But there is a dark side to the picture. Like morphine, cocaine too is said to enslave the mind and body of the unfortunate one who may become addicted to its use. Its effects are stated to be even more terrible than those of morphine. These results are said to be "a base enslavement of the mind, tending to selfishness and morbid criminality." It is to be hoped that practitioners and dispensers will bear these facts in mind, and do their utmost to prevent the indiscriminate, thoughtless and ignorant use of cocaine.

Still one more point: It is now well demonstrated that cocaine, in overdoses, is a poison, fatal results being reported in several instances.

It makes a good servant, but a poor master.

Still another case of the abuse of cocaine is reported from Chicago. It appears that, upon an order issued by Judge Pendergast, Dr. Charles D. Bradley was taken to the Washington Home for Inebriates. About the same time his young and handsome wife was conveyed to the County Hospital, two of his children were taken to St. Vincent's Asylum and the other three to St. Joseph's Hospital. All seven are mental and physical wrecks. Less than six months ago Bradley was a prominent physician on the north side. About the end of April he began to study the use of cocaine and its effects, and to aid his researches not only used it, but regularly administered it to his wife and children. His claim was that he could inject the drug into the human system without pain and remove the flesh without injury to the patient. At one time he injected some of it into his own arm, and then, with a red-hot iron, burned the flesh without flinching. At another time he injected it into the wrist of his three-year-old child, and with a knife cut out the flesh, the little one apparently suffering no pain. Still he craved for further investigation, and finally became a monomaniac on the subject. His practice fell off, and he mortgaged every piece of furniture in the house to get money to buy the drug. Physicians testified that he was hopelessly insane from the use of the drug.

SOME OLD THINGS IN MEDICINE.

The editor of the *Chicago Medical Times* has been delving in ancient medical literature, and gives extracts in his journal from a work written by a botanic physician about one hundred years ago. We reproduce a few of the curious remedies:

In the preface the botanic physician says: "Here you have the body of receipts, selected from the various authors, the most experienced, and as I believe honorable, good, and useful men who have not enriched themselves by their labors, but acted chiefly from a principal of love and good will to their fellow men."

"I have proved the virtue of many of the medicines recommended in this work, and I can say with a clear conscience that I esteem them as much superior to the apothecaries' drugs as the bright shining of the luminary of heaven is superior to the rays of the moon."

Of wake-robin he says: "This remedy is a sure cure for poison and the plague. It also procures urine; * * * * * taken with sheep's milk it heals ulcers. It doth cleanse all manner of rotten and filthy ulcers in what part of the body soever. The decoction of the root dropped into the eyes cleanses them from any film or skin clouds or mist that begin to hinder the sight."

"Elecampane strengthens the sight of the eyes wonderfully. It is very effectual to warm a cold windy stomach. It drives forth and kills all manner of worms that people are troubled with. It is good to fasten loose teeth."

"Hops helps to cure the French disease and all manner of scabs, itch, and other breakings out of the body."

He gives a recipe for blindness, a decoction of wintergreen and fresh butter, "communicated by a very pious old lady, whereby she did cure a young man that had been blind for two months, which had baffled the skill of the most eminent physicians in these parts."

The most delicate lady in the town of Preston was cured of the jaundice by the following medicine:

Two quarts of chamber lye from a healthy person, one handful of stone-root, and one handful of egg-shells pounded fine. These three put into a glass bottle and set into a kettle of water and boil three hours. Drink three glasses a day "until well."

"For an ague sore: Bathe the parts with lye brine for half an hour at a time; sweat the patient smartly with beech blocks. * If this does not remove the pain and swelling, skin a cat, rip her open and apply her to the pained part as quick as possible. * * If a faithful trial of these things should not answer, clap on a superating plaster and draw it to a head."

"A breach: Take snails that crawl about on old rotten logs, enough of them to cover the breach, bind on, and repeat as often as the snails are dry."

"For rheumatism: Steep a black wasp's nest in *cold* water until the strength is out. Give a gill every hour or two or three hours. Then give bell blows physic or some other kind of physic."

"Of puking to stop the same: * It may be checked in fevers by putting a spoonful of deer's horn burnt and powdered into a pint of water and boiling it. A teaspoonful may be taken every few minutes. Parched corn powdered is very good. Burned hoofs of the hog powdered and steeped in water gives relief."

"Bilious colic: * * Give a spoonful of sweet oil each hour; for this has cured one who was thought to be at the point of death. * * Get fresh horse dung before it falls to the ground, put it into boiling water, steep two minutes, settle and strain off the liquor. Sweeten it with sale molasses; let the patient drink this as warm as he can bear. This is a choice medicine for bilious colic."

"N. B. A *fine* lady was cured by this when all other means failed."

The contrast between the character of the lady and the character of the medicine must have been a marked one.

"Ague Fever: * * Just before the cold fit comes on put the feet into a tub of hot water up to the knees. As the cold shivers come on drink down cold water as fast as possible. The heat from below and the cold from above will meet in the stomach and fall at variance, and the patient will puke at no small rate."

The author gives a special treatment for fever and ague in Indiana. He evidently concedes the original perverseness of the Hoosiers, and is familiar with the impotent character of all ordinary measures with them.

"Quinsy: * * Wear a string around the neck that has been tied around a dried toad's neck and it cures the quinsy or scatters it away."

"Mouth canker: Take a pound of fresh butter and let it boil. When boiling add four green frogs alive. Let them stew until the frogs are dry; then take them out and add a little chamomile and parsley. Anoint the mouth and let the patient swallow a few drops frequently."

A CASE IN PRACTICE.

About four weeks since, two gentleman patients called in the morning. Each was suffering from an acute abscess on the root of the right inferior lateral incisor. The general appearance of the two cases was similar. Accumulation of pus in alveolar socket was evident in both; there was

greater swelling on the lingual surface of one than on the other, with evidence of it having been of a few hours longer standing. In this latter case I extracted the tooth, found considerable thickening of the peridental membrane around the apical end; this end for nearly or about the sixteenth of an inch was excised, the foramen enlarged, the root from this opening cleansed and purified by carbolic acid and iodine, equal parts of each, and then the enlarged opening closed with a piece of sterilized pivot wood, carbolic acid being used for the purpose of sterilizing. The alveolar socket was washed out with warm water and then sponged out with a pledget of cotton, wrapped on an instrument, moistened in the carbolic acid and iodine; the tooth was now reinserted and firmly secured by linen ligatures to the adjoining teeth, and the gums on both the labial and lingual surfaces painted with iodine. In three days the application of iodine was renewed and the ligatures replaced and tightened. In the three weeks following, the patient called three times; at the last visit the ligatures were removed, the tooth was comparatively firm and the case dismissed as cured, the patient having had no pain from the first except the few seconds in extracting the tooth.

The other case, which by a singular coincidence was so similar in every respect, was drilled into, the root cleansed and saturated with carbolic acid and iodine. It has been under treatment ever since, the patient calling twice a week. It is not yet well, though filled temporarily; much thickening still remains in the tissues around the root, to which is applied occasionally tincture of iodine.

While the method of extracting and re-inserting for the cure of alveolar abscess has not been practiced to any extent, it does seem quite applicable in some cases of single-rooted teeth. Of the five or six of these operations, embracing those that had been knocked out by accident and re-inserted, which the writer has had, but one only has been unsuccessful. —C. N. P., in *Dental Practitioner*.

A NEW PROCESS FOR HARDENING PLASTER.

A new process for rendering plaster very hard and capable of being substituted for wood in flooring has been brought out by M. Juhle. Plaster has this advantage over cements, and even over wood, that it increases rather than diminishes in bulk on being applied to structures, but it fails in hardness and surface resistance. To overcome this difficulty, M. Juhle mixes six parts of good plaster with one part of rich lime recently slaked and finely sifted. This mixture is to be used like ordinary plaster, and the object made from it, when it is very dry, is

caused to imbibe a solution of a sulphate which has a base precipitable by lime, and this precipitate is insoluble. Such are the sulphates of zinc or iron. The theory of the process is as follows: The lime contained in the pores of the plaster decomposes the sulphate, with production of two insoluble bodies, to wit: sulphate of lime and oxide, which fill the pores of the object submitted to the treatment in question. With sulphate of zinc the object keeps of a white color, but with sulphate of iron the object, at first greenish, takes, on drying and with lapse of time, the color of the sesquioxide of iron. With sulphate of iron the hardest surfaces are obtained, the resistance of rupture being 20 times greater than with ordinary plaster. To obtain the maximum hardness and tenacity, it is necessary that the object should first be very dry and steeped in a solution which is practically saturated. The first immersion of the object in the solution ought not to last over two hours, as a too-long immersion at first is apt to render the surface friable. On drying the plaster object afresh after the first immersion, there is no further fear of its becoming friable. If the proportion of slaked lime is too great, the surface is apt to take a hard, marble-like skin, which prevents the hardening of the inner portions of the object. The proportion of one of lime to six of plaster, as stated above, has given the best results. Plaques made in this way can be browned by rubbing them with linseed oil and litharge, and glazed on the surface with hard copal varnish. A beautiful glassy flooring like polished oak can in this way be prepared.—*Building.*

PROFESSIONAL RETICENCE.

Some years ago a patient consulted the late Mr. C. H. Moore, with reference to an obscure injury to the ankle joint, which had resulted in the displacement of one or more of the tarsal bones; and that careful surgeon, after making a minute and painstaking examination and satisfying himself of the exact nature of the injury, formed the opinion that nothing could be done, but that the inconvenience must be borne. The patient, hoping for better things, then sought the advice of a surgeon in the eyes of the public yet more distinguished, who, barely glancing at his foot, and not troubling to form any very exact diagnosis, said—“Well, my man, you have injured your foot, and you must just put up with it.” Whereupon the sufferer went his way, proclaiming aloud to his friends that the one saw what was the matter at a glance, but that the other had taken three-quarters of an hour to do so, and so must be very far inferior in acumen.

This anecdote will bring to the mind of not a few dentists the feelings of disgust which they have experienced when, after devoting such time and care to an operation as perhaps to make it quite unremunerative, their patient has expressed discontent at the time consumed, and has remarked that Mr. So-and-So has often filled much larger cavities for him without taking such a long time, and without hurting him half so much, and has further expressed in no dubious terms his preference for the slip-slop work which that model practitioner has been in the habit of doing for him. And as it is very difficult to go on day after day doing our very best for patients by whom the extra care bestowed is little, if at all, appreciated, there is a tendency towards the unconscious adoption of a lower standard which it requires much determination and conscientiousness to effectually resist, and the remedy is one not quite easy of application. It is obvious that the only thing which will bring about in this respect a real lightening of the dentist's task, is the more complete enlightenment of the patients upon the nature of that which is being done for them; but nevertheless it is a little difficult to impart this information without appearing to extol one's own work, a thing the least semblance of which is utterly hateful to any properly-constituted mind. We so thoroughly despise the quack who imposes upon the gullible section of the public—and a very large section it is—by loud-voiced assertions of the wonderful things he can do, that, in the fear of never so remotely reminding our patients of such discreditable folk, we often refrain from imparting to them any knowledge whatever of what we are about, and so pile up trouble for ourselves in the future.

Every practitioner of the smallest experience must be very fully aware how easy it is, by comparison, to operate for an intelligent patient, and how hard it is to do anything like our best for a stupid one. It has been well observed that no one should ever pass judgment, even in his own heart, upon the work which has been done in a particular mouth, until he has first operated for that patient himself.

We would inculcate upon our readers, therefore, the advisability of taking every opportunity of instructing their patients—so far, at least, as may be necessary in order to give them an intelligent interest in the work—in the nature of that which it is proposed to do, in its aims and in its possible shortcomings, and so placing them in the position of being able to co-operate in the overcoming of difficulties or at least to sympathize with them. This neglect in informing the recipient of our services of the nature of that which is in hand is, we fancy, very general amongst dentists, although we are sure that the little time needed to do something in the direction indicated, would be most amply and with interest repaid by the greater facility with which future operations would be performed. And this suggests the consideration of another question upon which some

of our readers will, perhaps, differ from us, namely, to what extent, if to any, the patient should be allowed to select between lines of treatment.

In medical matters it is rarely possible that the patient can be placed in such a position as to form an opinion worth the smallest consideration, but with respect to the simpler problems offered in dental surgery this is not so fully the case, and it may often be possible to place the matter before the patient in such a manner that he may form his own opinion as to the course he would prefer. For example, it may be a question whether a particular cavity should be filled with gold or with amalgam; in the opinion of the dentist gold would be the better, yet it would involve a lengthy operation, a larger fee, and more endurance on the part of the patient, with at the end of it all some degree of uncertainty as to the durability of the result. In such a case the relative merits of the two methods may be placed in such a light that the patient is, we think, quite entitled to choose for himself, and should not be coerced into submission to the opinion of his adviser; whilst on the other hand the latter should of course never be over-persuaded into acting in a manner contrary to his own distinctly held conviction.—*Journal of the British Dental Association.*

CHALFANT'S PARDON.

The following item of news appears in the *Dental Cosmos* for October. It is from the *Sacramento Bee*, of late date:

Governor Stoneman to-day issued a pardon to Dr. Samuel B. Chalfant, who killed Josiah Bacon, an agent of the Goodyear Rubber Company, in the Baldwin Hotel, San Francisco, several years ago, and who was convicted of murder in the second degree and sentenced to ten years' imprisonment at San Quentin. It will be remembered that shortly after Chalfant was imprisoned, a woman named Perkins appeared on the scene and began efforts to secure his release. At one time the doctor escaped from the prison, through plans believed to have been matured by the woman. He was recaptured in Nevada, however, and returned to San Quentin. Mrs. Perkins never abated her efforts to secure his pardon, and how successfully she has labored is shown by the fact that his pardon was petitioned for by the entire jury before whom Chalfant was tried, the judge who sentenced him, the prosecuting attorney and a large number of the leading citizens of San Francisco. It is understood that Mrs. Perkins will soon become Mrs. Chalfant.

INTERNATIONAL MEDICAL CONGRESS—SPECIAL ANNOUNCEMENT.

To the Medical Profession of all Countries :

The Executive Committee of the Ninth International Medical Congress, to be held in the city of Washington, D. C., commencing on the first Monday in September, 1887, having accepted, under Rule 10 of the Committee on Preliminary Organization, charge of the business of the Congress, hereby give notice to the members of the medical profession that they have been actively engaged upon, and have now nearly completed, the arrangements for this meeting; and they anticipate the hearty co-operation of the profession everywhere in developing this great scientific and humanitarian assembly.

By order of the Executive Committee,

HENRY H. SMITH, M.D., Philadelphia,

Chairman of Committee.

NATHAN S. DAVIS, M.D., LL.D., Chicago,

Secretary-General of Ninth International Medical Congress.

OBITUARY.

DIED.—In Hartford, Conn., November 11th, Dr. John M. Riggs.

Dr. Riggs was born in Seymour, Conn., October 25th, 1810. He graduated at Trinity College, Hartford, in 1837, and soon after commenced the studies which were to fit him for the practice of dentistry. His operations upon human teeth gave evidence of remarkable skill and good judgment, and his fillings of soft gold and tin foil withstood the wear and tear to which they were subjected for several decades of years, with scarcely a perceptible change of appearance.

The first surgical operation ever attempted under the effect of an anæsthetic was performed by Dr. Riggs. His subject was Dr. Horace Wells, also of Hartford, whose office was in an adjoining room of the same building with Dr. Riggs. At a comic exhibition of "laughing gas," given by Mr. C. G. Colton, in Hartford, the evening before, Dr. Wells observed that a young man who had just recovered from the exhilarating effects of the gas, had so abraded the skin on his hand as to cause the blood to flow somewhat freely, yet was not conscious of the injury until his attention was directed to the wound by Dr. Wells. Replies from several questions put to the youth deeply impressed Dr. Wells with the belief

that "laughing gas" might be of value in surgical cases, by rendering patients insensible to pain. To satisfy himself on this point he determined to give the gas a practical test, and having a superior molar in his own mouth, which at times had given him slight annoyance, he decided to inhale the gas and have the tooth extracted. Mr. Colton was engaged to administer the gas, and when Dr. Wells was fully under its influence Dr. Riggs applied the forceps and removed the molar. The experiment proved a perfect success. "Anæsthesia" was thus discovered, and to the world was given one of its greatest blessings. This was on the 11th of December, 1844, which antedates the use of ether as an anæsthetic for nearly two years. After this the nitrous oxide gas was used by both Drs. Wells and Riggs, for several years.

Dr. Riggs achieved quite a reputation in the professional world in his arduous efforts towards learning the nature and arresting the progress of the disease called *pyorrhæa alveolaris*, sometimes known as "Riggs' disease." Probably no other man ever gave to this troublesome malady more thought or greater attention than did Dr. Riggs. As a member of our profession he won an honorable position, and was much esteemed by all who knew him.—*C. E. F., in The Independent Practitioner.*

A MOST extraordinary case is reported of a man, while harshly punishing a horse, being attacked by the infuriated beast, the animal seizing his right arm at the wrist, which by biting and wrenching was nearly separated from the man's body. The arm was changed almost to an unrecognizable mass. The tissues below the elbow were torn from their attachments, and the bones were broken into numerous small pieces. Within twenty-four hours mortification had set in, a well-defined line at the shoulder indicating the progress of the gangrenous degeneration. The man died thirty-six hours after the injury.

ALTHOUGH cocaine has been a partial failure in its application to dentistry, it is without doubt of inestimable value in ophthalmology. Dr. B. E. Tryer, of Kansas City, Mo., says: Had we ophthalmic surgeons been given Aladin's lamp, and with it the privilege to ask for the best assistant in ophthalmic surgery, we could not have sought for one greater boon to us than this grandly useful drug. I have done every operation on the eye save enucleation, under cocaine, and many of them several times, and can testify to the great benefit and advantage, both for the operator and patient. If the drug is properly applied, the eye can be so thoroughly anæsthetized that there need be no shrinking, no flinching, and the operation on the eye can be safely and systematically done.

THE September number of *L'Art Dentaire* contains twenty-eight finely-executed engravings (gravures) of irregularities, together with several appliances for correcting irregularities—quite a commendable enterprise on the part of the editor, A. Préterre.

KISSING FROM A MEDICAL STANDPOINT.—A correspondent in our valued contemporary, *Babyhood*, of September, 1885, justly condemns the custom, quite usual with some mothers, of compelling children to kiss people promiscuously. The sensibilities of children are very acute, and it is not surprising that they should strenuously object to promiscuous osculatory exercises. It is enough to make even a young child lose all faith in human nature to be compelled to kiss some people. And apart from the physical objections to the habit, there are moral objections to it. If a child objects, it is a species of cruelty to compel it to kiss; and, if it does not object, it may become so wedded to the habit as possibly to entail serious moral or physical consequences in after life.

THE INCREASED demand for corundum among polishers shows the value of that mineral for practical use. It cuts much faster, and, it is claimed, will do nearly double the work of emery. The latter is a variety of corundum of the same mineral species as the sapphire, ruby, emerald and the topaz. The abrasive power of all minerals depends upon their hardness. The diamond has the best cutting power and greatest durability. Next in hardness comes the sapphire, having a deep blue color, and corundum of this shade is considered better for all practical uses. The principal dealers in the article get the product direct from mines in North and South Carolina. The common variety of corundum is brittle, translucent, infusible before a blow-pipe and insoluble in acids. It is the pure alumina in the native crystalline state.

WHILE M. Pasteur, at his country retreat, has been developing a means of combating the spread of hydrophobia, alarmist notes have been sounded in the public press. There can be no doubt that hydrophobia is on the increase, and will continue to increase until the owners of dogs are sufficiently educated to recognize the preliminary symptoms of rabies. A dog that slobbers with hanging jaws, and barks unnaturally, should be destroyed. Dumb rabies is the most dangerous, perhaps, because the animal, while retaining a knowledge of his master and friends, is apt to be snappish, and bite without warning. Cauterization of such wounds is practically of little value, and the best thing that can be done is to suck the wound forcibly so as to draw as much blood and fluid from the part as possible. At a recent sitting of the Paris Academy of Sciences, M.

Pasteur read a long paper on this subject, and furnished proofs that his method of inoculation had cured hydrophobia, and was easily practicable. Dr. Vulpian corroborated, from personal observation.

A PATENT entitled "Dentistry" has recently been granted to an Iowa dentist. We judged by the title that the applicant had secured a patent on our profession, and that hereafter licenses would have to be obtained to enable one to practice. On reading the claim, however, we discovered that repairing rubber plates by replacing the entire rubber, was the real purport of the patent. This process has been described in dental journals for years, and the writer has used the same for at least twenty years, and supposed that every dentist in the land was familiar with it. It is simply removing the old plate by the aid of heat, while the teeth are held *in situ* by the plaster in the flask, and replacing it by new rubber and vulcanizing.

The patentee is not so much at fault as the examiners at Washington; and would it not have been better for the examiners to have submitted the matter to some practical dentist before deciding to pass the application? The patent cannot possibly affect dentists or "dentistry" in any manner, but it increases the receipts of the patent office to the extent of a fee that could have been used to a better purpose by the patentee.

Below is the claim, which is covered up with so much plastic material that a portion of it will have to be scraped off before a proper understanding can be obtained:

Claim.—The process for replacing, duplicating or repairing rubber dental plates, which consists in first depositing on the plate to be renewed or replaced a thin impression-cast of suitable plastic material, then filling in the plate on the thin impression-cast with a plastic mold, then cutting a groove in the exterior rim of the rubber plate and filling said groove with wax, then flasking the teeth in a plaster mold, then subjecting the closed flask and contents to dry heat to devulcanize the rubber, then removing the devulcanized plate and replacing its mold with packed rubber, and then vulcanizing the same, all substantially as set forth.

HOW TO WAX UP A CASE.—I do not use celluloid altogether, but find it especially good where the alveolar ridge presents prominent and uneven points, and in just those cases, by what I understand as the old method of dropping melted wax and paraffine on the model and carving, there is danger of getting the wax too thin over prominent points. I think a better and a much safer way is to lay a sheet of wax over the model as thick as the thinnest places are to be, and then drop on wax and paraffine of a different color, so that in carving the color would be a guide to thickness, and prevent the wax being carved too thin in places.—*D. D. Lester, in Southern Dental Journal.*

MISCELLANEOUS NOTES.

Norwegium is the name of a new metal discovered by Dr. T. Dahll, in a specimen of nickel ore from Kragero, Norway.

"I fear," said Dr. Jalap, "that you have got some foreign substance in this prescription." "Possibly," replied the apothecary, "but look at your prescription. It is foreign all through."—*Boston Transcript*.

Dr. David Bennett, a physician, was born in England on December 1, 1615, and died at Rowley, Mass., February 4, 1719, aged 103 years. It is recorded that he never lost a tooth, and that his senses were good to the last.

A scientific writer says that alcohol is one of the constant and necessary results of the process of yeast fermentation, and it seems a pity that about 1,000 gallons of it should be wasted daily by evaporation in the making of bread for New York alone.

The original MS. of the lectures delivered by William Harvey before the Royal College of Physicians in 1616 and the following years, which were discovered a few years ago in the British Museum, are to be published in a fac-simile reproduction, together with an interleaved transcript made by Mr. J. S. Scott, of the MSS. department of the Museum. The work will be issued by Messrs. Churchill, of London, probably in the spring of next year.

A Case of Congenital Deformity, reported by Dr. Hyde, of Chicago, was attributed by the mother to ante-natal maternal impression, she having been "kicked by a cow" early in pregnancy. It must be that since the cow kicked over the lamp and set the city afire in 1871, untoward results are attributed to the wanton employment of the posterior extremity by the bovine species among the people of Chicago to a degree not usual in other localities.—*Albany Medical Annals*.

Test for the Purity of Metallic Mercury.—The following simple test for detecting the purity of metallic mercury is given in the *Jour. f. Uhrmacherkunst*. Ordinary nitric acid is placed in a dish, and a drop of mercury is added. If the latter is pure, it will only move about for an instant after being added, and then remain perfectly quiet. Bubbles of gas will slowly be evolved, and the metal becomes coated with a white powder, consisting of mercurous nitrate. The liquid is colored very faint green. With impure mercury a lively gyratory motion is always produced, accompanied by a tail of small gas bubbles. The motion continues until the mercury is completely dissolved, and the nitric acid assumes a dark gray color.—*Druggists' Circular*.

The Anthropological Congress, which is shortly to be held at Rome, will, says *Nature*, have a curious feature in a collection of seven hundred skulls of criminals, numbered and classified. To these will be added the photographs of 3,000, and the brains of more than 150 convicts, thousands of autographs, poems, sketches and special instruments, the work of criminals, an album containing a record of 700 observations, physical and moral, on 500 criminals and on 300 ordinary men. There will also be graphic maps of crime in Europe, with reference to meteorology, food, institutions, suicide, etc.; tables of the stature of the criminals in relation to the length of the arms, and of crime in towns compared to that in the country. M. Bertillon will exhibit the graphic curves of 23,000 *recidivistes* examined in twelve parts of the body, and the practical results obtained. Photographs of Russian political and other criminals, especially of those from Moscow, and wax masks of a large number of celebrated criminals will also be exhibited. All the notabilities in the science of criminal anthropology will take part in the Congress.

Metric System Condemned.—Oscar Oldberg (*National Druggist*, St. Louis, Nov. 13) has for several years been an earnest and eminent advocate of the metric system. Now, after closer study, he is led to believe that the metric system does not fulfill the requirements of medicine and pharmacy, because of the inconvenient size of the units and the impossibility of binary subdivision.

Dr. Lewis Lewis, Philadelphia, according to the *Am. Jour. Pharm.*, has been using cigarettes composed in part of coca leaf and partly of tobacco, for about nine years, in the treatment of throat affections. Dr. F. E. Stewart (*Phil. Med. Times*,) has employed a cigar made of coca leaf with a wrapper of mild imported tobacco; also a cigarette of coca wrapped with rice paper, and a "smoking tobacco" made of coca without admixture of any kind, which may be smoked in a pipe. By the use of these preparations the peculiar effects of coca were obtained, though in a milder degree than after taking it internally.

Dr. E. A. Bogue, of New York, recently demonstrated the use of his (?) separators before the British Dental Association. The report of the demonstration says: To those who have hitherto looked upon the separator as an instrument of torture, this demonstration must have afforded unmixed pleasure; and we venture to prophesy that few out of the many who witnessed Dr. Bogue's delicate manipulation, and the ease, rapidity, certainty and painless manner in which his instruments were adjusted, will in future classify the separator as a near relation of the old thumb-screw. It was both amusing and instructive to observe the demeanor of the succession of volunteers who submitted to the operation. How the set features of heroic resignation gradually calmed into a look of tranquil submission, and ended in a silent expression of undisguised wonder! These instruments are the outcome of years of thought and experience on the part of Dr. Bogue,

and their practical success depends on the extreme accuracy and almost hair-breadth refinement with which they are constructed.

The habit of chewing gum preserves the teeth, develops the gums and should be encouraged.—*People's Health Journal*.

Those philanthropists who have a hobby, are very sure to ride it to extremes. In the above advice, they forget entirely the draft on the salivary glands and consequent derangement of their function and the injurious effect upon the digestion, to say nothing of the appearance of one addicted to the habit, engaged in it.—*Chicago Medical Times*.

This is the first intimation we have had of our being philanthropists, or that we rode a hobby. No. We have not forgotten the action of the habit upon the salivary glands, neither have we forgotten the fact that for every case of indigestion caused by chewing gum two or more have been cured by it. Our statement above, encouraging the habit of chewing gum, was not the result of wild theorizing, but deduced from the testimony of competent observers, whose names and addresses we will give upon application. The effect of exercise upon any other portion of the body, as is well known, tends to strengthen and enlarge it. Immobilize an arm, and it becomes after a time weak and useless. Feed a young dog upon liquid or soft food, and deny him a bone or any hard substance at which to gnaw, and in a comparatively short time his teeth will fall out. It is proverbial that millers have good teeth. Is it unreasonable to suppose that this is due to the exercise given the teeth by the habit of chewing the hard grains of wheat, and that chewing gum likewise has a beneficial effect by exercising the teeth and causing an increased flow of blood to their roots, and consequently an increased amount of nourishment? We think not. As to the appearance of the habit, it is out of the province of *The People's Health Journal* to discuss, and still more foreign should it be to the subject matter of our slightly squeamish but otherwise excellent contemporary.—*People's Health Journal*.

BOOK NOTICES.

DENTAL BIBLIOGRAPHY. A Standard Reference List of Books on Dentistry published throughout the world from 1536 to 1885. Arranged chronologically, and supplemented with a complete Cross-Reference to Authors. Compiled by C. George Crowley. One hundred and eighty pages. Philadelphia: The S. S. White Dental Manufacturing Co., 1885. Price, cloth, \$2.00.

We cannot do better than to copy the following notice of the above work from the *Dental Cosmos*, as it expresses our ideas completely. Our great wonder is why the publication of such works should be undertaken by any one, as the undertaking is sure to entail a loss pecuniarily. Not that the work is unworthy perpetuation, but the demand is so limited that first cost will never be realized. For this reason a firm less inclined to advance the interests of the profession at large, would have positively declined the publication of such a work.

"We have in this volume the outcome of a long and laborious effort to present a complete list of distinctive works on dental subjects which have been published throughout the world from the earliest times. It catalogues 2047 titles, printed in the various languages in which the books appeared, and chronologically arranged. The work is divided into five departments or sections. Section I. contains books published in Germany, Austria, Holland, Norway, Sweden, Denmark and Switzerland (German); Section II. books published in France, Belgium and Switzerland (French); Section III. books published in Spain and Italy; Section IV. books published in Great Britain and Ireland; Section V. books published in America. An author's index appended in alphabetical order gives cross-reference to all the volumes catalogued.

"No attempt to compile and publish a complete dental bibliography has heretofore been made, and this volume is the only work of its kind in existence. One who has never engaged in such an effort can form no adequate idea of the amount of labor involved in the production of a bibliography of this character. The work must prove invaluable to those engaged in the formation of dental libraries, and to those desiring to study the literature of any dental subject. The thanks of the dental profession are certainly due to the publisher, to whom it must have been evident in advance that the enterprise would result in pecuniary loss, but who nevertheless spared no expense necessary to the production of a volume of which every dentist may justly feel proud. A copy of this book should be in the library of every member of the profession who aspires to a familiarity with the literature of his specialty.—J. H. S."

DENTAL MEDICINE. A manual of Dental Materia Medica and Therapeutics for practitioners and students. By Ferdinand J. S. Gorgas, A. M., M. D., D. D. S., Professor of the principles of Dental Science, Dental Surgery and Dental Mechanism, in the Dental Department of the University of Maryland. 8vo. Second edition, revised and enlarged. Philadelphia: P. Blackiston, Son & Co., 1885. Cloth, \$3.25.

The necessity for a second edition of Gorgas' Dental Medicine is gratifying evidence of the estimation in which the work is held by the profession. We have found the first edition of inestimable value, and have had occasion to refer to it more frequently than to any other work in our possession, and always with satisfying results.

The present edition has been thoroughly revised, and from the author's preface we learn that "among the additions are a chapter on inflammations, with special reference to the mucous membrane of the mouth; a synopsis of the treatment, with additions, of affections of the oral cavity; the results of recent investigations into the properties of

anæsthetic agents; the methods of prominent practitioners for the employment of medicinal agents in the treatment of affections for which such agents are specially applicable. To the Dental Materia Medica, such agents as cocaine, peroxide of hydrogen, iodide of zinc, chlorides of certain metals, boracic and other acids; Duquesnel's aconitine, papain, resorcin, syrup of lacto-phosphate of lime, eugenol, Jamaica dogwood, glyceroborates of calcium and sodium, naphthalin, the medicinal oleates, boroglyceride, sulphate of cadmium, chinoline, oil of sanitas, sulphites of calcium and sodium, etc., etc., have been added; also a number of formulæ and an index to dental diseases," making the most complete work on dental medicine ever published.

QUIZ QUESTIONS. Course on Dental Pathology and Therapeutics. Philadelphia Dental College. Prof. J. Foster Flagg, D. D. S., answered by William C. Foulke, D. D. S. Third edition, revised and enlarged. Philadelphia: The S. S. White Dental Mfg. Co., 1885.

We are more favorably impressed with the third edition than we were with the second. We note many additions which are improvements in every respect. The work is not, as many suppose, questions and answers regarding Dr. Flagg's "New Departure" theories, but a propounding of just such questions that need answering in everyday practice. That Dr. Foulke has answered the queries in a pertinent and satisfactory manner is manifest throughout the work.

THE DESCENT OF MAN. By Charles Darwin. J. Fitzgerald, Publisher, 393 Pearl street, New York.

This famous work, perhaps the most important scientific treatise of the present century, is now being published at such a price as brings it within the reach of all readers. It will be completed in four numbers of the Humboldt Library of Science, of which the first has now appeared, to be followed by the second on November 20, and the third and fourth at intervals of one month. The price of each of the four parts is 15 cents, and they will be sent to any address, postage paid, on receipt of that amount in coin or in postage stamps.

EVOLUTION IN HISTORY, LANGUAGE AND SCIENCE Four Addresses delivered at the London Crystal Palace School of Art, Science and Literature. Price, 15 cents, post free. J. Fitzgerald, Publisher, 393 Pearl street, New York.

This interesting work forms a valuable addition to the series of popular scientific works known as the "Humboldt Library." The number of works published in that series now amounts to seventy, including many of the most celebrated writings of Huxley, Spencer, Tyndall, Darwin, and others.

"WHAT TOMMY DID." John Habberton, author of "Helen's Babies," says: "'What Tommy Did' would be worthy of the serious consideration of parents if it were possible for any one to be other than *wildly mirthful* over the saintlinesses and dreadfulnesses of the little hero. Tommy is an ideal boy—one of the kind which are by turns unendurable and angelic, which changes parents from young to old, and from old to young again many times a day. *We pity parents* who fail to read this book; there is no time in the day, nor any day in the week, in which its pages will not dispel care." The *Chicago Tribune* pronounces it a book that "will delight every boy and girl, and every mother too, who will find in it a book that can be read over and over again to suit the insatiable appetites of youthful listeners, and yet never sicken the reader with any weakness or nonsense in its composition."—It has just been published in dainty, delightful shape, fine cloth, richly ornamented binding by Alden, the "Revolution" publisher, at half its former price; 50 cents. Address John B. Alden, Publisher, New York.

BOOKS RECEIVED.

NOTE ON THE USE OF COCAINE IN HAY FEVER. By Roberts Bartholow, M. D., LL. D., Professor of Materia Medica, General Therapeutics and Hygiene in the Jefferson Medical College of Philadelphia.

THE THERAPEUTICS OF HIGH TEMPERATURES IN YOUNG CHILDREN. By William Perry Watson, A. M., M. D., Jersey City, N. J. Assistant to the Chair of Diseases of Children in the New York Polyclinic.

THE PEOPLE'S HEALTH JOURNAL OF CHICAGO, An independent, popular monthly magazine, devoted to Hygiene, Sanitary Science and Preventive Medicine. Chicago: 441 Dearborn Ave. \$1.00 a year, in advance. 10 cents a copy.

THE LIBRARY MAGAZINE. Monthly. New York: John B. Alden, 393 Pearl Street. Price, \$1.50 a year.

LETTERS FROM A MOTHER TO A MOTHER ON CHILDREN'S TEETH. By Mrs. M. W. J. Third Edition, revised and enlarged. Price, 25 cents. Welch Dental Company, Philadelphia.

PHYSICIAN'S VISITING LIST, 1886. Thirty-fifth year of its publication. Containing Calendar; List of Poisons and Antidotes; Dose Tables rewritten and revised; Hall's Ready Method in Asphyxia; Lists of New Remedies; Sylvester's Method for producing Artificial Respiration, with Illustrations; A New Table for Calculating the Period of Utero-Gestation; Diagram for Diagnosing Diseases of the Heart, Lungs, etc., etc. P. Blakiston, Son & Co., 1012 Walnut street, Philadelphia.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION at the Twenty-fifth Annual Session, held at Minneapolis, 1885. Philadelphia: The S. S. White Dental Mfg. Co.

HARPER'S YOUNG PEOPLE. An illustrated weekly. New York: Harper & Brothers. \$1.50 per year, in advance.

IRITIS. Its Relation to the Rheumatic Diathesis and its Treatment. By Charles J. Lundy, A. M., D. D., Professor of Diseases of the Eye, Ear and Throat in the Detroit College of Medicine, and Ophthalmic Surgeon to Harper Hospital, etc.

DENTAL PATENTS.

ISSUED FOR THE QUARTER PRECEDING THE DATE OF THIS JOURNAL.

326,185.—September 15, 1885.—DENTISTS' OR PHOTOGRAPHERS' CHAIR.—Otis C. White, Worcester, Mass.

326,537.—September 22, 1885.—DENTAL PLUGGER.—Robert H. Antes, Geneseo, Ills.

326,942.—September 29, 1885.—DENTAL ENGINE HAND-PIECE COUPLING.—Arthur W. Browne, Westfield, N. Y.

326,957.—September 29, 1885.—ELECTRICAL ATTACHMENT FOR DENTAL CHAIRS.—Charles A. Eisenhart, York, Pa.

- 327,437.—September 29, 1885.—MACHINE FOR BARBING DENTAL BROACHES, &C.—Robert B. Donaldson, Washington, D. C.
328,442.—October 13, 1885.—DENTISTRY.—James L. Whinery, Union, Ia.
328,659.—October 20, 1885.—ATTACHMENT FOR DENTAL CHAIRS.—George A. Dille, Athens, Ohio.
328,837.—October 20, 1885.—ARTIFICIAL TOOTH-CROWN AND ITS ATTACHMENTS.—Calvin S. Case, Jackson, Mich.
329,587.—November 3, 1885.—DENTAL PLUGGER.—Walter K. Moore, Marinette, Wis.
330,011.—November 10, 1885.—DENTAL APPLIANCE FOR MIXING AMALGAM.—David Genese, Baltimore, Md.
330,431.—November 17, 1885.—ARTIFICIAL TOOTH.—L. T. Sheffield, New York, N. Y.
330,831.—November 19, 1885.—ARTIFICIAL TOOTH.—Charles P. Grout, New York, N. Y.
331,121.—November 24, 1885.—ELECTRICAL APPARATUS FOR DENTAL OPERATIONS.—Charles A. Eisenhart, York, Pa.
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HERBST • METHOD • OF • FILLING • TEETH.

FOIL • OR • CYLINDERS.

This Gold is made in reference to the HERBST method of filling teeth with the engine. It has also proven a very desirable article for the *mallet* and *hand-pressure*.

The manufacturer claims it to be superior to any other make for its peculiar *softness*. It easily adapts itself to the walls of the cavity, and when properly manipulated it makes a *solid* and *cohesive filling*. If it is to be used cohesively, a slight *warming over* the flame will have the desired result.

PRICE.

Foil, \$4.00 per $\frac{1}{8}$ oz., \$15.00 per $\frac{1}{2}$ oz., \$30.00 per 1 oz.

Cylinders, . . \$4.50 per $\frac{1}{8}$ oz., \$17.00 per $\frac{1}{2}$ oz., \$34.00 per 1 oz.

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

• ENDLESS •
VULCANIZER PACKING.

There has been some demand for an endless packing for the Whitney Vulcanizer, and we have at last succeeded in obtaining some, equal in quality and similar in structure to the packing strips commonly used. There are rubber rings sold as endless packing, which are wholly unsuitable for the purpose. These can be relied upon as a good article.

PRICE, . . . 8 CTS. EACH.

**AKRON
 DENTAL RUBBER.**

The material of which this Rubber is composed is prepared by a new process, which insures

ABSOLUTE PURITY,

RESULTING IN A PRODUCT OF
 WONDERFUL

DENSITY, • FINENESS • AND • STRENGTH.

It is especially designed to meet the requirements of those who seek to produce the most perfect and artistic work. It is exceedingly tough and light, and takes a beautiful polish. Plates may be made very thin without splitting or crumbling away about the edges. It can be used with the best results for making

PARTIAL LOWER DENTURES,
 an advantage which no other rubber possesses. It has the unqualified approbation and endorsement of the profession everywhere, and never fails to give satisfaction.

PRICE, \$3.00 PER POUND.

For Sale by **BUFFALO DENTAL MFG. CO.**

MERCURY • • •



Re-Distilled.

The purer the Mercury used in preparing amalgam, the greater the assurance of a successful operation.

• The B. D. M. CO'S •

Re-Distilled • Mercury

IS AS PURE AS CAN BE
 PROCURED.

PRICE PER BOTTLE, . . . 40 CENTS.

THE TRADE SUPPLIED.

REDUCTION IN PRICE.

• FLETCHER'S •

Gutta • Percha • Hydraulic

• CEMENT. •

PRICE PER CAKE, . . \$1.00

SCIENTIFIC AMERICAN
 ESTABLISHED 1846.

The most popular **Weekly** newspaper devoted to science, mechanics, engineering discoveries, inventions and patents ever published. Every number illustrated with splendid engravings. This publication furnishes a most valuable encyclopedia of information which no person should be without. The popularity of the **SCIENTIFIC AMERICAN** is such that its circulation nearly equals that of all other papers of its class combined. Price, \$3.20 a year. Discount to Clubs. Sold by all newsdealers. **MUNN & CO., Publishers, No. 361 Broadway, N. Y.**

PATENTS. Munn & Co. have also had **Thirty-Eight years'** practice before the Patent Office and have prepared more than **One Hundred Thousand** applications for patents in the United States and foreign countries. Caveats, Trade-Marks, Copy-rights, Assignments, and all other papers for securing to inventors their rights in the United States, Canada, England, France, Germany and other foreign countries, prepared at short notice and on reasonable terms. Information as to obtaining patents cheerfully given without charge. Hand-books of information sent free. Patents obtained through Munn & Co. are noticed in the **Scientific American** free. The advantage of such notice is well understood by all persons who wish to dispose of their patents. Address **MUNN & CO., Office SCIENTIFIC AMERICAN, 361 Broadway, New York.**

THE SNOW & LEWIS AUTOMATIC PLUGGER.

Patented October 24, 1865, October 30, November 20, 1866, June 23, 1868, and June 1, 1869.
Patent of October 30th, 1866, re-issued August 22, 1876, February 2, 1880.

THE MOST POPULAR AND EFFICIENT DENTAL INSTRUMENT EVER OFFERED TO THE PROFESSION.

This instrument, since its invention in 1865, has been improved from time to time, and has become one of the best known and most indispensable adjuncts to the dentist's operating case. It is now made after two patterns, the old and new style. The "old style" of instrument has

TWO DISTINCT GRADES OF BLOWS,

one-eighth and one-quarter inch, regulated by means of the ring on the body of the instrument; the finer graduation of the strength of the blow being attained by turning the milled head at the end of the case.

The "new style" embodies an improvement, by which all lateral motion between the socket-piece and its bearings is prevented, and future wear between the parts provided for. This insures

PERFECT STEADINESS OF THE POINT,

which can now be placed as desired with the same certainty as with a hand instrument. The new instrument has but the one-eighth inch length of blow, which can be varied in strength, as before, by the milled head at the end of the case. By means of the ring on the handle, either of

THE PLUGGERS CAN BE LOCKED,

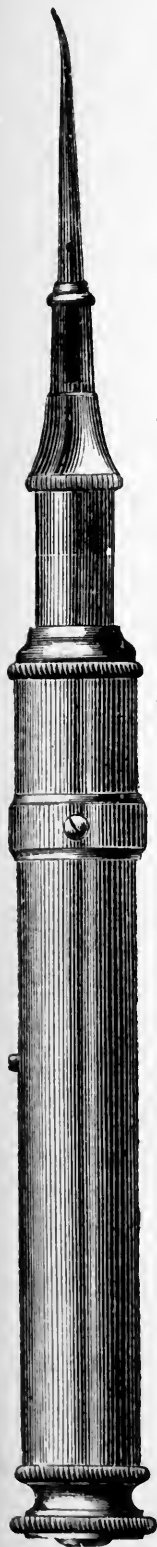
and used as a hand instrument. The above feature is not presented in any other Spring Plugger in the market.

The mechanical devices of the Plugger are protected by patents, embracing all points of any moment applicable to Automatic Pluggers, and we hardly need say that we shall strictly enforce all the rights secured to us therein.

PRICES.

Automatic Plugger, triple Gilt, No. 1 or 2,	\$13.00
Automatic Plugger, Silver or Nickel-plated,	9.00
Points, per dozen,	3.50
Varney's Points, per set of 13,	7.00
Butler's Points, per set of 16,	6.00
Enamel Chisels, per set,	2.25
Morocco case, with Point Rack,	3.50

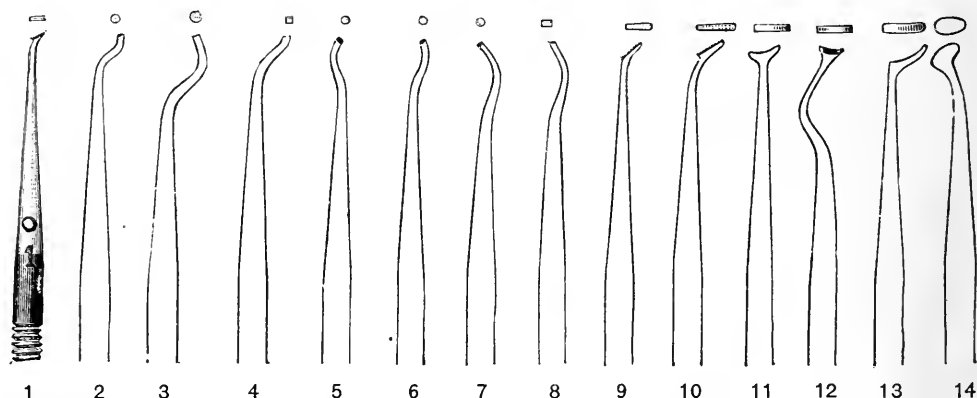
Points of any desired pattern furnished to order.



SET · “L” A · NEW · SET · OF SHORT · POINTS

• • FOR • THE • •

S^{NOW · & · LEWIS} · AUTOMATIC PLUGGER



THE above selection of short Automatic Plugger Points has been subjected to a test of nearly two years, and are now brought out with the belief that they are the most completely practical set yet designed to meet all cases and situations. There is not a superfluous point in the set.

Particular attention is called to

• • • • • NUMBER · 12 • • • • •

Which is especially designed for finishing and condensing the lingual portion of fillings in incisor teeth. This is a remarkably effective point. (The cut does not properly show the angles on this point.)

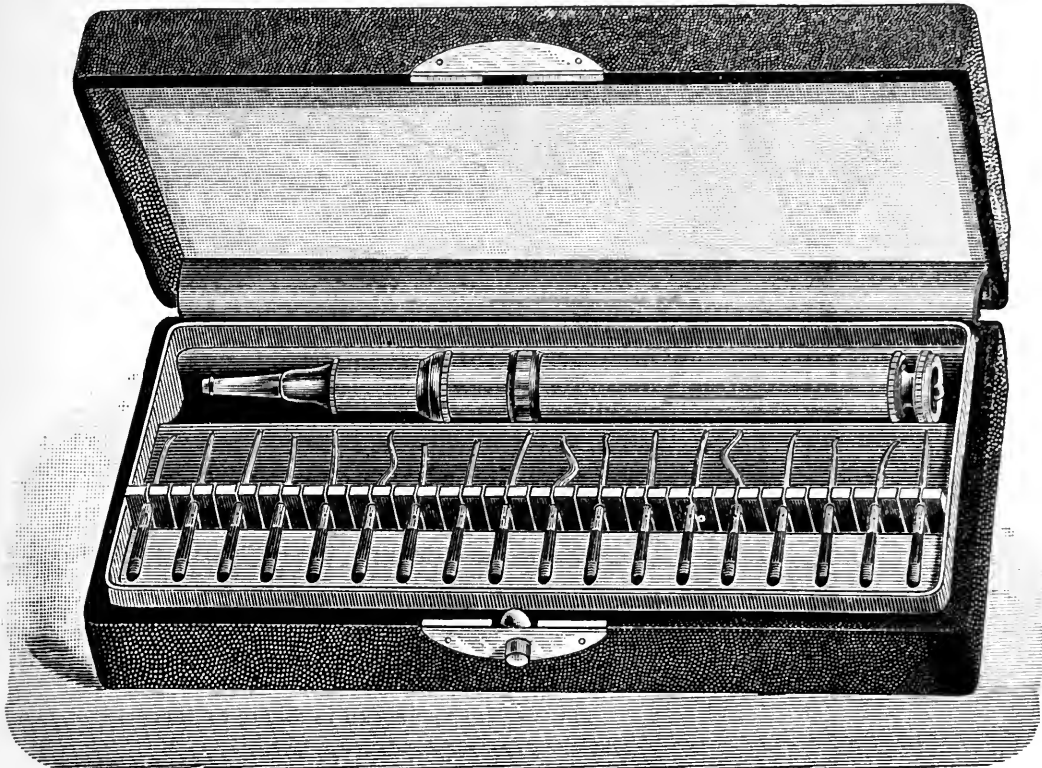
• • • NUMBERS · 13 · AND · 14 • • •

Are smooth, and are designed mainly to obliterate the marks of the serrated points. No. 13 for the six anterior teeth, and No. 14 for bicuspid and molars.

PRICES SET “L” AUTOMATIC PLUGGER POINTS.

• •	Nos. 1, 2, 3, 5, 6, 7, 13, 14,	each \$0.50	• •
	Nos. 4, 8, 9, 10, 11, 12,	each .75	
	Per set of 14,	6.50	

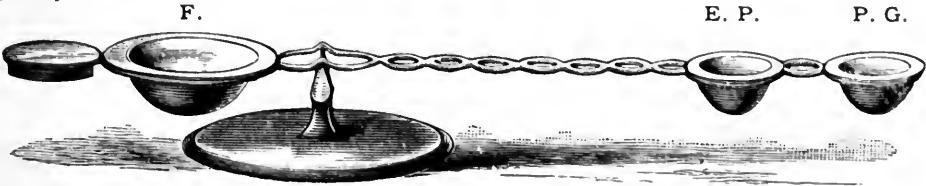
MOROCCO CASE FOR THE SNOW & LEWIS AUTOMATIC PLUGGER.—This case is of morocco, velvet-lined, and contains a Snow & Lewis Automatic Plugger and 18 selected Plugger Points, supported by a Hayes Point Rack, Nickel Plated.



PRICES.

Snow & Lewis Automatic Plugger, Silver or Nickel Plated, 18 Plugger	
Points, Point Rack and Morocco Case, complete,	\$17.50
Morocco Case, with one Point Rack, for 18 points,	3.50
Morocco Case. with two Point Racks, for 36 points,	5.00

FLETCHER'S DIFFERENTIAL BALANCE FOR AMALGAMS.—This new balance for obtaining the proper proportions of filings and mercury is so simple and precise that it is indispensable when uniformity is desired. The resulting mass is always the same, whatever the nature of the alloy may be.



New Pattern.—Nickel Plated.

To use the method, weigh with the new differential balance the proportions required, by putting mercury in the cup E. P. for the Extra Plastic Amalgam, or in the cup P. G. for the Platinum and Gold Amalgam, then pouring filings into the cup F., until the mercury is balanced.
 F.—E. P. gives 3 of filings to 1 mercury (Extra Plastic). F.—P. G. gives 4 of filings to 1 mercury (Platinum and Gold).

PRICE.

Fletcher's Differential Balance,	75 cents.
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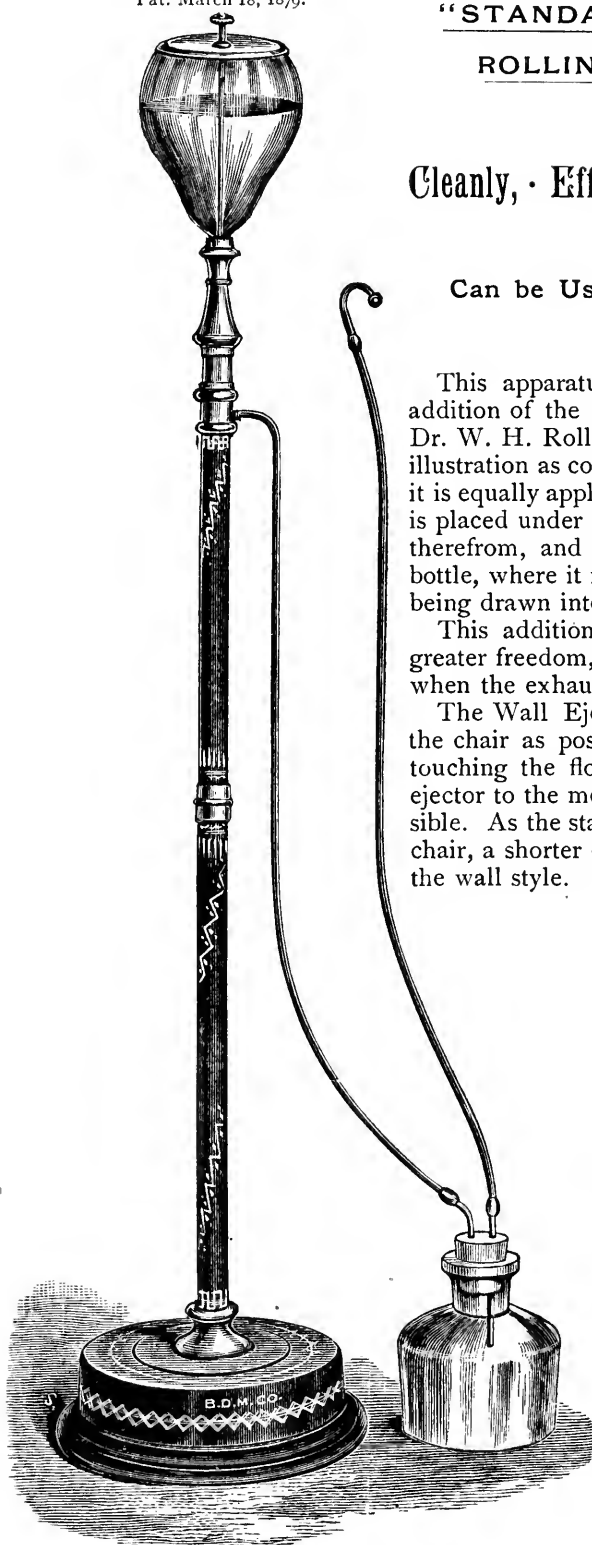
Snow's · Saliva · Ejector.

Pat. March 18, 1879.

"STANDARD" STYLE, WITH THE
ROLLINS EXHAUST BOTTLE.

Cleanly, · Efficient, · Noiseless · in · Action.

Can be Used Without a Water Supply.



"Standard" Style, with the Rollins Exhaust Bottle.

This apparatus has lately been improved by the addition of the Rollins Exhaust Bottle, suggested by Dr. W. H. Rollins, of Boston. This is shown in the illustration as connected with the Standard Ejector, but it is equally applicable to the Wall Pattern. The bottle is placed under the chair, the ejector exhausting the air therefrom, and the saliva descends directly into the bottle, where it remains; the air passing over with it being drawn into and expelled from the ejector.

This addition enables the ejector to operate with greater freedom, and with less water than is required when the exhaust bottle is not used.

The Wall Ejector can be hung to the wall as near the chair as possible, with the lower reservoir nearly touching the floor. The connecting tube from the ejector to the mouth-piece should be as short as possible. As the standard Ejector can be set closely to the chair, a shorter connecting tube can be used than with the wall style.

If the exhaust bottle is used, the same water can be used many times over, as it is not contaminated with saliva, and the ejector can be placed in any convenient place, a long connection being in this case admissible—a matter of great convenience in many operating rooms.

The mouth-piece and tube should be rinsed after use by allowing a tumbler full of water to run through them, and the mouth-piece thoroughly washed. It can then be replaced on the rubber tube, which it is well to remove from the ejector and hang on the wall to drain. Glass mouth-pieces may be used for the fastidious, each patient having the exclusive use of one.

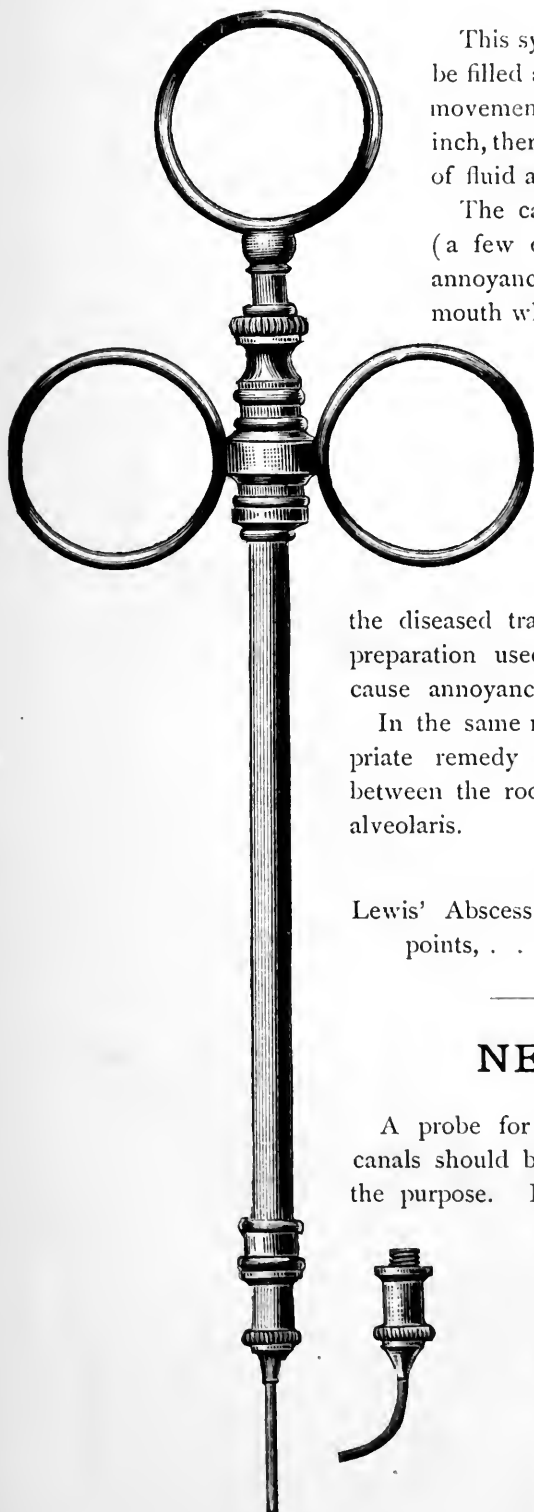
PRICES.

Wall Saliva Ejector, with four feet of Rubber Tubing, . .	\$15.00
Standard Saliva Ejector, with four feet of Rubber Tubing, . .	18.00
Rollins' Exhaust Bottle, . .	1.00
Glass Mouth-Pieces, each, . .	.20
Boxing,	1.00

THE LEWIS ABSCESS SYRINGE

FOR TREATMENT OF

Alveolar Abscess, Pyorrhœa Alveolaris, etc.



This syringe is so constructed that it can be filled and operated with one hand. The movement of the piston is but $\frac{1}{4}$ of an inch, thereby taking up the desired quantity of fluid and no more.

The capacity of the syringe is so small (a few drops only) that it obviates the annoyance of cauterizing the inside of the mouth when using creosote or other strong medicines.

By using a drill of the same size as the syringe point, its whole contents can be discharged into the pulp canal and through the apical foramen and into the fistulous sinus, thoroughly medicating the diseased tract without allowing any of the preparation used to escape into the mouth to cause annoyance to the patient.

In the same manner a few drops of the appropriate remedy may be placed in the pocket between the root and gum in a case of pyorrhœa alveolaris.

PRICE.

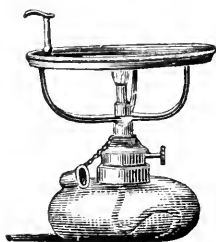
Lewis' Abscess Syringe, with two gold points, \$3.50

NEW PROBE.

A probe for introducing dressings into root canals should be of the right size and temper for the purpose. It should be elastic, yet not so hard as to break, and fine enough to carry cotton to the end of the canal. The one illustrated is made of piano wire, which combines elasticity and toughness in a surprising degree.

PRICE.

Piano Wire Probe, each, . . 25 cents.

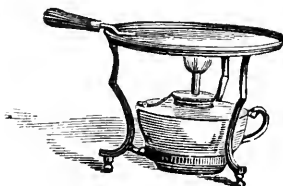


The Whitney Annealing Lamp.

This is a glass lamp, with a thumb-piece for adjusting the size of the flame. The brass frame which holds the tray is removable, and also fits the Laboratory Gas Burner, enabling the dentist to use either Alcohol or Gas. Diameter of Tray, 4 inches. Height of Lamp, $3\frac{3}{4}$ inches.

PRICE.

Whitney Annealing Lamp, \$1.50

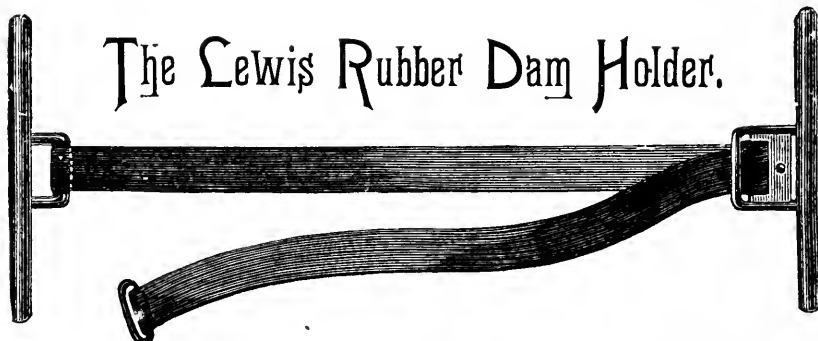


The Lewis Annealing Lamp.

This consists of a brass ornamental tripod $3\frac{1}{4}$ inches high, holding a tray 4 inches in diameter, with Britannia Lamp.

PRICES.

Lewis Annealing Lamp, \$1.50
 Lewis Annealing Lamp, Silver Plated, 3.00



The Lewis Rubber Dam Holder.

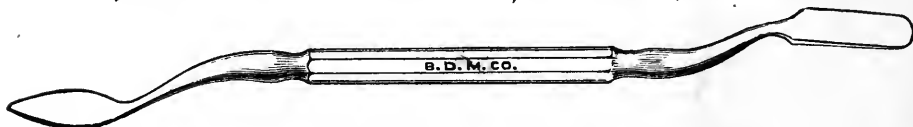
This is a device for holding the rubber dam in position while operating. It is much more effective than the ordinary rubber dam holder. The rubber being smoothly stretched over the patient's lips and cheeks, is therefore entirely out of the way of the operator. The holder is secured to the rubber by simply being stretched over the ends of the bars, and is held in place by its own contraction.

The improvement consists in a slotted slide, through which the braid passes, enabling the operator to produce tension by drawing on the free end of the braid, or to relieve the strain by pushing the slide back with the thumb nail.

PRICE.

The Lewis Rubber Dam Holder, Nickel-plated, 50 cents.

Spatula for White Plastic Fillings.



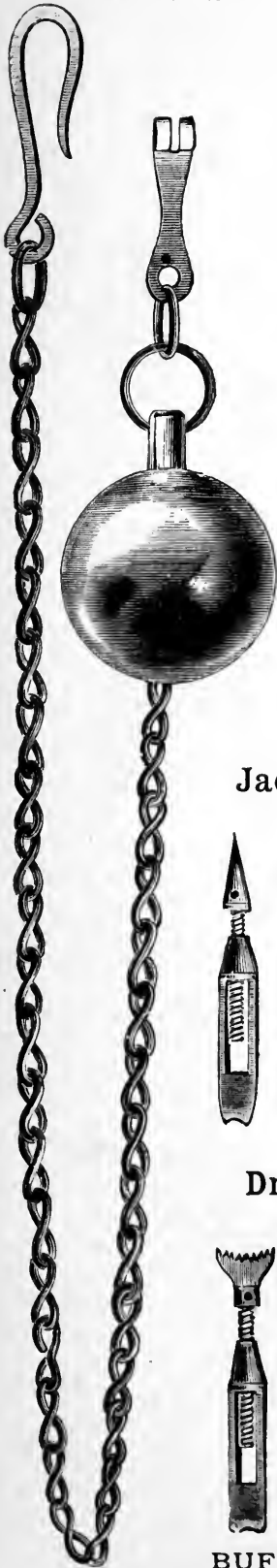
This is a new pattern of Spatula (designed by Thomas Fletcher, F. C. S.,) for mixing white plastic filling materials, and is recommended more especially for the PORCELAIN CEMENT, as a broad rigid spatula with a firm grip for the hand is a necessity for the proper mixing of this material.

PRICE.

Fletcher's Spatula, Nickel-plated, 60 cents.

The Lewis Rubber Dam Tension Weight.

Pat. March 9, 1875.



This appliance is for the purpose of keeping a loose corner or projecting fold of the rubber dam out of the way of the operator, and is capable of obtaining tension in almost any direction required. It consists of a chain with a hook at one end for attachment to the rubber, and a ball at the other end as a weight. The length of the chain admits of the ball being thrown over the back of the chair, to one side or in almost any direction. A second hook attached to the ball can be caught in the chain at any point to shorten it.

This little appliance has been in use several years, and is well spoken of, being admirably adapted for the purpose for which it is designed.

The ball is of metal and Nickel-plated.

PRICES.

Lewis Tension Weight, No. 1, weighs $1\frac{3}{4}$ oz., 50c.
Lewis Tension Weight, No. 2, weighs $3\frac{1}{2}$ oz., 50c.
Lewis Tension Weight, No. 3, weighs $4\frac{3}{4}$ oz., 50c.

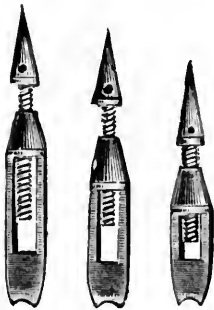
BUFFALO FOIL CARRIERS.

These Carriers are of good workmanship, well tempered, and Nickel-plated. They are the cheapest and best made Foil Carriers in the market.

PRICE.

Buffalo Foil Carrier, 90 cts. each.

Jack Screws for Regulating Teeth.



These are of the ordinary shape and in three sizes, as follows: $\frac{7}{8}$ in. opening to $1\frac{1}{8}$ in., 1 in. opening to $1\frac{3}{8}$ in., $1\frac{1}{8}$ in. opening to $1\frac{1}{2}$ in. By a new process we have recently adopted, these Jack Screws are perfectly PROTECTED FROM RUSTING. They are always ready, and after long continued use will be found to turn as easily as at first.

PRICE.

Jack Screws, Old Style, each, \$1.50.

Dr. A. P. Southwick's Jack Screws.



Especially designed for use against bicuspid for expanding the arch. One tooth is moved at a time; the plate being notched for the reception of the revolving head of the jack screw, which bears directly upon the tooth. New rubber is vulcanized in the notch to retain the tooth in position.

Three sizes are made, the same in length as the above. They are also RUST-PROOF.

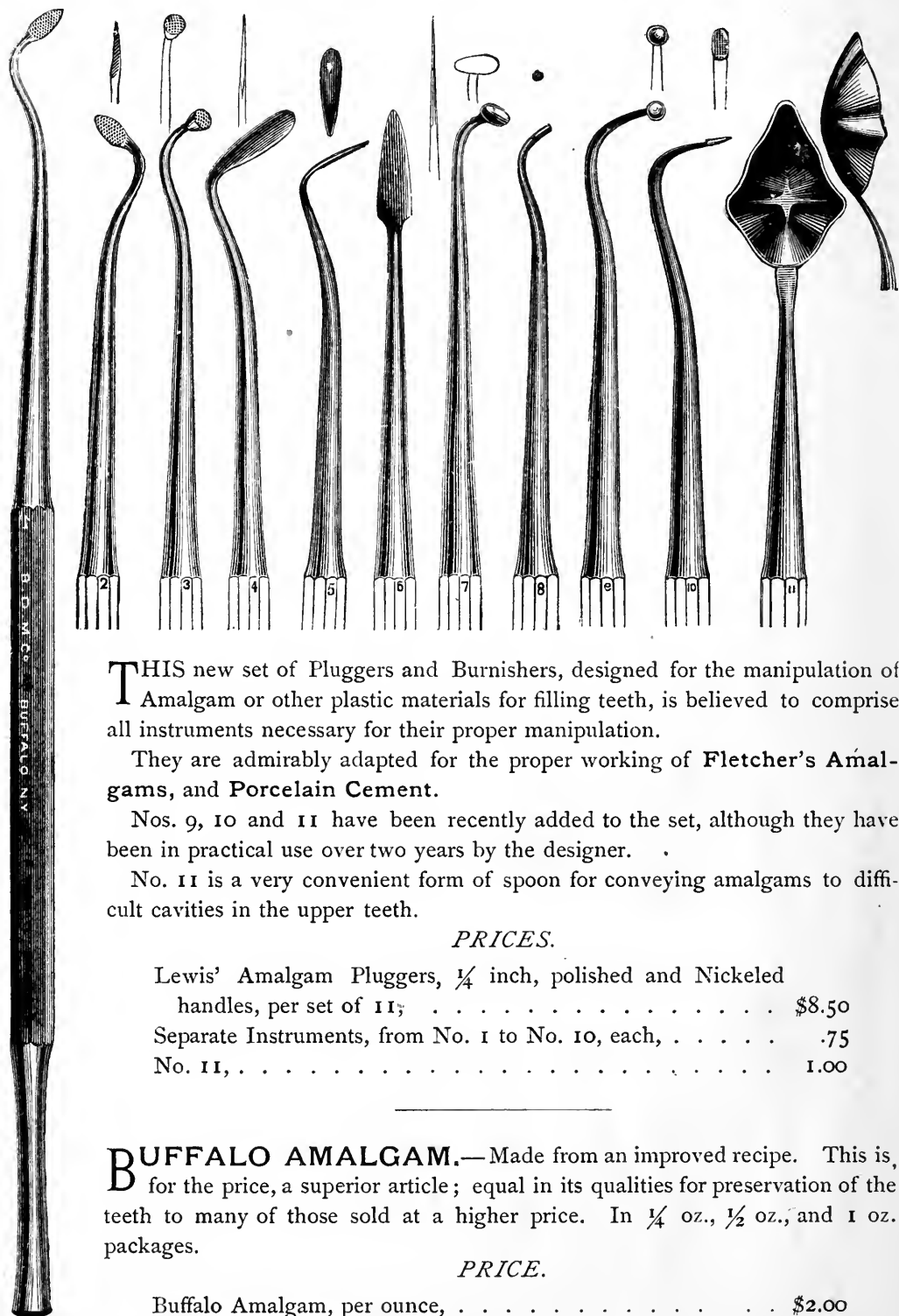
PRICE, each, \$1.50.

BUFFALO DENTAL MANUFACTURING COMPANY.



New • Amalgam • Pluggers • and • Burnishers

Devised by DR. THEO. G. LEWIS.



THIS new set of Pluggers and Burnishers, designed for the manipulation of Amalgam or other plastic materials for filling teeth, is believed to comprise all instruments necessary for their proper manipulation.

They are admirably adapted for the proper working of **Fletcher's Amalgams**, and **Porcelain Cement**.

Nos. 9, 10 and 11 have been recently added to the set, although they have been in practical use over two years by the designer.

No. 11 is a very convenient form of spoon for conveying amalgams to difficult cavities in the upper teeth.

PRICES.

Lewis' Amalgam Pluggers, $\frac{1}{4}$ inch, polished and Nickeled handles, per set of 11;	\$8.50
Separate Instruments, from No. 1 to No. 10, each,	.75
No. 11,	1.00

BUFFALO AMALGAM.—Made from an improved recipe. This is, for the price, a superior article; equal in its qualities for preservation of the teeth to many of those sold at a higher price. In $\frac{1}{4}$ oz., $\frac{1}{2}$ oz., and 1 oz. packages.

PRICE.

Buffalo Amalgam, per ounce,	\$2.00
-----------------------------	--------

JUST THE THING! NEW! NICE! PRACTICAL!

EVERYBODY IS USING THEM.

DENTAL CAPSICUM PLASTERS

Made of the same ingredients as the popular "pepper bag," and are more effectual; very cheap; nicely flavored; soft and flexible; with thick felt back; will stick to the gums; will not dissolve in the mouth or impregnate the saliva with pepper; smart only on the gums; gotten up in nice style, and pleases everybody.

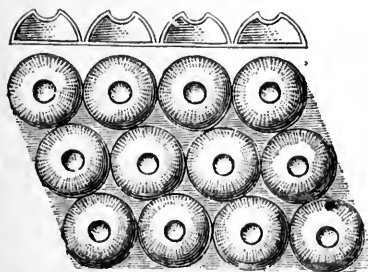
For securing resolution or suppuration in inflammatory conditions of the pericemental membrane, and for the relief of all pulp irritation, they have no equal.

Sent to any address, Six Dozen for \$1.00.

Prepared by FRANK B. DARBY, D. D. S.,

126 East Water Street, ELMIRA, N. Y.

[oct-85-1y.] FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.



Surface Cohesion Forms for Artificial Dentures.

A system by which Artificial Dentures can be made much smaller, and hold firmly, as the cohesion extends over the whole surface of the plate, instead of only at one point as in the central air or suction chamber. By the use of the *Surface Cohesion Forms* the sense of taste is not impaired nor is there any irritation. The inner surface of the plate will be covered with semi-oval projections (as seen in cut enlarged four diameters) the whole length of the plate, which causes it to stick to the gums as if it were glued, and without causing any irritation of the membrane.

The *Surface Cohesion Forms* are cemented on the cast, with liquid rubber, the *Surface Form* being correspondingly cut; after the wax is boiled out, and flask packed, the flask is screwed together, and when vulcanized, the palatal surface of the plate will be covered with semi-oval projections its entire length, and with a beautiful clean finish. For gold, platinum or any metal, cement the "surface cohesion form" to plaster cast, mould in sand, make three zinc dies, and lead counter dies and swag up plate.

SURFACE COHESION FORMS, put up neatly in boxes of one dozen, with full directions, \$1.00

Liquid Rubber, per bottle, 35 cents; per dozen bottles, 4.00

For sale at all Dental Depots.

A method of preparing Rubber plates for the vulcanizer without waxing or flasking. Full instructions furnished for \$5.00 on application to

Dr. J. SPYER, 245 East 19th St., New York City.

PHILADELPHIA, July 13, 1885.—The undersigned have witnessed a satisfactory clinic given by Dr. Spyer of his new method of constructing vulcanite plates.

S. H. GUILFORD, D. D. S.

FRANK R. FABER, D. D. S.

THEODORE F. CHUPEIN, D. D. S.

CHAS. F. BONSALE, D. D. S.

A. P. BEALE, D. D. S.

H. M. SHEPPARD, D. D. S.

THOMAS W. BUCKINGHAM, D. D. S.

GEO. W. CUPITT, D. D. S.

[oct-85-1y]

GEER'S PHENOL DENTIFRICE



This Standard Preparation

by far excels any dentifrice ever offered to the public. This assertion is corroborated by the numerous encomiums received from leading dentists in all parts of the country, and by the large and constantly increasing sales.

CARBOLIZED TOOTH POWDER

is of inestimable value in *preserving* and *beautifying* the teeth, *strengthening* the gums and giving pleasant fragrance to the breath. It prevents and arrests decay, polishes and preserves the enamel to which it imparts a pearl-like whiteness. Its unprecedented success for ten years shows the universal favor in which it is held, while the fact of its being compounded of the choicest materials, selected with extreme care, constitutes it the purest and safest tooth powder now in use. Put up in

1/4, 1/2, 1 and 4-lb. Cans,	\$1.00 per pound.
10-lb. . . . .	.90 "
20-lb. . . . .	.80 "

FOR SALE BY BUFFALO DENTAL MANUFACTURING COMPANY,
IN ANY QUANTITY, WHOLESALE OR RETAIL.

CAULK'S FILLING MATERIALS.

(ESTABLISHED 1877.)

DIAMOND CEMENT

THIS COMPOUND NOW STANDS WITHOUT A RIVAL. From Five to Seven Years Test by leading Dentists throughout the World has proved it to be all that has been claimed for it.

FOR MOUNTING ARTIFICIAL CROWNS—it has been highly recommended, is non-irritating, non-conducting, in harmony with tooth structure, has no shrinkage or expansion, and excellent for lining cavities and capping pulps.

IT WILL HARDEN IN WATER OR SALIVA. It does not deteriorate with age. We have some over THREE YEARS OLD, and it works as nicely as when first made. We have increased the quantity of liquid in both packages, and all bottles are lettered with "Caulk's Diamond Cement."

PRICE—(One Color,) Gray, Yellow, Medium or Light, Per Package, \$1.00
(Two Colors,) Gray and Yellow, (reduced to) " " 1.50
(Four Colors,) Gray, Yellow, Medium and Light, " " 2.00

The Universal Verdict is that CAULK'S DIAMOND CEMENT IS THE BEST. A Fair Trial will convince you.

CAULK'S PAR-EXCELLENCE ALLOY.

THIS GOLD AND PLATINA ALLOY IS MANUFACTURED on a NEW PRINCIPLE.

NONE BETTER MADE. SAVES TEETH WHERE OTHERS FAIL. With one exception, we were the first to manufacture an Amalgam containing Gold and Platina, although we did not call it such, simply our trade name **Par-Excellence Alloy**, which fully expresses the superiority of this combination of metals over others.

It is the result of a long series of experiments, and has been in constant use for several years. By our new method of manufacture there is **NO GUESSWORK**, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

PRICE, in 1-3, 1-2 and 1 ounce packages, per ounce, \$3.00; 2 ozs., \$5.00.

CAULK'S WHITE ALLOY

HAS BEEN GREATLY IMPROVED, COSTING MORE TO PRODUCE IT. THERE IS NOTHING EQUAL OR SUPERIOR TO IT.

Is of a peculiar grayish-white color. When amalgamated in the hand works with a soft and velvety feeling. Is very **DENSE**, and so malleable that it can be malletted with the greatest ease.

Highly recommended in Combination Fillings of Gold and Amalgam. When properly manipulated with **PURE MERCURY** it will retain its color under all circumstances.

PRICE, 1-4, 1-2 and 1 oz. packages, per oz., \$4.00. **PRICE**, 2 ounces, \$7.00.

CAULK'S DIAMOND POINT STOPPING.

This form of gutta-percha, having been in the market for several years, has stood the greatest test of all—that of time. It is regarded as the best preparation of its kind for filling teeth in the world.

The Stopping is put up in Sealed Envelopes, and the Pellets and Cylinders in Sealed Boxes, each bearing a fac-simile of our signature.

PRICE, in 1-8, 1-4, 1-2 and 1 ounce packages, per ounce, (reduced to) \$2.00.

CAULK'S HYDRAULIC PEBBLES.

Its **HYDRAULIC** qualities render it invaluable for setting pivot teeth. It is so pliable that it can be molded or shaped into various forms, and when crystalization is complete can be carved and polished, same as the sculptor does his marble.

PRICE, large package, \$2.00. **PRICE**, small package, \$1.00.

ALL OF CAULK'S FILLING MATERIALS are sold by **TROY WEIGHT**.

OVER FIFTEEN THOUSAND (15,000) Dentists are using these Materials throughout the civilized world. What better evidence do you wish of their Superiority and Excellence? If your dealer or agent does not have these materials, send your order to our address and it will receive prompt attention.

CAULK'S DENTAL ANNUAL FOR 1884-'85.

A Dental Hand-Book of Reference. Pamphlet of 100 octavo pages. Price, 25 cents.

L. D. CAULK, Manufacturer and Proprietor,
CAMDEN, DELAWARE.

[apl-85-1y.] Sold at all Dental Depots. For sale by Buffalo Dental Manufacturing Company.

SAMSON RUBBER

MANUFACTURED BY

EUGENE DOHERTY,

No. 444 First Street, Brooklyn, E. D., New York.

WARRANTED TO BE

THE STRONGEST AND MOST UNIFORM RUBBER MANUFACTURED.

It is the TOUGHEST and Most Durable Rubber Made. Vulcanizes same as Ordinary Rubber.

SAMSON RUBBER.



MANUFACTURER OF ALL KINDS OF

DENTAL RUBBERS AND GUTTA PERCHAS.

PRICE LIST OF DENTAL RUBBERS AND GUTTA PERCHAS.

No. 1 Red Rubber, per lb.,	\$2.25	No. 1 Red Weighted Rubber, per lb., \$4.00
No. 2 Red Rubber, per lb.,	2.25	No. 2 Red Weighted Rubber, per lb., 4.00
Samson Rubber, per lb.,	2.75	Black Weighted or Amalgamated
Black Rubber, per lb.,	2.25	Rubber, per lb.,
Flexible or Palate Rubber, per lb., .	2.75	Weighted Gutta Percha, per lb., . .
Gutta Percha for Base Plates, per lb.,	2.25	Adamantine Filling or Stopping, per
Vulcanite Gutta Percha, per lb., . .	3.50	oz.,

NOTE.—The above Rubbers and Gutta Perchas will be furnished in pound or half-pound packages to any Dentists in the country on receipt of price, and stating that they cannot get them at the Dental Depots in or near their place of business. Circulars giving full instructions how to use all of my Rubbers and Gutta Perchas, will be found in each box or package with the article ordered.

EUGENE DOHERTY, 444 First Street, Brooklyn, E. D., New York.

[ja84-1y.]

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

New · Specialties · in · Gold

FOR FILLING.

• • • • •

SOFT · BURNISH · GOLD · CYLINDERS.



Sizes, $\frac{1}{2}$, 1, 2, 3, and assorted.

These cylinders are made with particular reference to the new system of packing gold with engine burnishers.

They also have excellent qualities for use with Mallet or Hand Pluggers.

A prominent New York operator says: "As a soft gold they surpass anything I ever used."

· COHESIVE · BURNISH · GOLD · CYLINDERS ·



Sizes, $\frac{1}{2}$, 1, 2, 3, and assorted.

Are similar to the above, but are *fully Cohesive*. They also have the quality of toughness, so the *plugger point carries the gold before it* instead of cutting through. It is claimed for them that they possess, in the highest degree so far known, the

MAXIMUM OF COHESION WITH THE . . . MAXIMUM OF SOFTNESS AND TOUGHNESS

• • • • •

It is believed these two varieties of Burnish Gold Cylinders possess such desirable and hitherto unobtained working properties, that they are well worth a trial by all first-class operators.

\$4.50 per $\frac{1}{8}$ oz.—\$17.50 per $\frac{1}{2}$ oz.

For Sale by
B. D. M. CO.

R. S. WILLIAMS,
No. 115 WEST 42d STREET,

NEW YORK
CITY.

Owing to the Constantly Increasing Demand

FOR



AND WITH

NEW FACILITIES FOR MANUFACTURING

I am enabled to announce the following

GREAT · REDUCTION

In Prices, which hereafter will be

4 cts. per Gallon in 100 Gallon Cylinders.

3½ “ “ 500 “ “

COMPLETE GAS APPARATUS OUTFITS.

	Former Prices.		Reduced to
Surgeon's Case, with 4½ gal. gas bag			
and 100 gal. Cylinder filled,	\$42.00	\$40.00	\$37.75
Surgeon's Case, with 7 gal. gas bag			
and 100 gal. Cylinder filled,	44.00	42.00	39.00
Univers. Tripod, with 4½ gal. gas bag			
and 100 gal. Cylinder filled,	36.00	34.00	32.75
Univers. Tripod, with 7 gal. gas bag			
and 100 gal. Cylinder filled,	38.00	36.00	34.50

SEPARATE PARTS.

Cylinder containing 100 gal. gas, . . .	\$16.00	\$15.00	\$14.00
“ “ 500 “ . . .	44.00	42.00	39.50
Re-filling 100 gal. Cylinder,	6.00	5.00	4.00
“ 500 “ per gal. 3½c. . . .	22.50	20.00	17.50

I continue to REFILL Cylinders of ALL
MAKES, as well as to GUARANTEE the KEY-
STONE VALVE, and the WEIGHTS of the
Cylinders as marked ON THE LABELS.

Dentists having EXPERIENCED TROUBLE
and LOSS OF GAS through FAULTY valves,
will find it to their ADVANTAGE to have them
REPLACED by the KEYSTONE valve at a
nominal cost.

PHILADELPHIA, PA., April 1, 1885.

H. D. JUSTI,

DENTAL DEPOT,

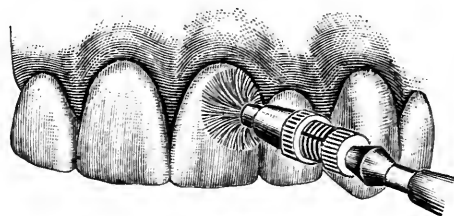
No. 516 Arch St., - Philadelphia, Pa.

BRANCH: 66 E. MADISON ST., CHICAGO, ILL.

Sole Agent for the Keystone Gas Regenerating Co.

• • • • • Tooth • Polishing • Brush

PRICE.
Per doz., 75 cts.



PRICE.
Each, . . . 7 cts.

. . The Brush is shown properly applied to the tooth, which may thus be cleansed from discoloration even under the free margins of the gums, where the fan-like edge of the Brush will carry the polishing powder without injuring the gum-margin. The cervical margins of fillings may also be perfectly polished in the same manner. The low price at which it is sold favors the safe and cleanly practice of throwing the Brush away when the patient leaves the chair. Made in three grades, soft, medium and stiff, and adapted for use with the Klump Porte-Polisher.

Rubber • and • Corundum • Points •



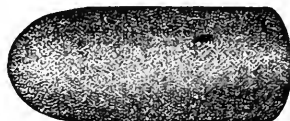
. . These Points are made of the same material as our well-known Rubber and Corundum Disks, and will be found effective in cutting tooth material or dressing off fillings. They are solid throughout, and they can be used as long as enough of the material remains to be grasped by the porte-polisher.

PRICE,—per doz., \$1.00. Each, 10c.

Very • Small • Felt • Cone • • • •

SUGGESTED BY DR. H. A. ROBINSON.

PRICE.
Per doz., 75 cents.



PRICE.
Each, . . 7 cents.

. . This Cone is designed to reach difficult spaces when polishing plates. Its shape is satisfactory for general use. When for a particular case it is wanted a little narrower or more pointed, it can easily be trimmed into the desired shape.

The • \$. • \$. • WHITE • DENTAL • MANUFACTURING • CO.
Philadelphia, New York, Boston, Chicago, Brooklyn.

FLETCHER'S

Carbolized · Resin

IS HIGHLY RECOMMENDED AS A SUBSTITUTE FOR CREOSOTE IN NEARLY
EVERY CASE; BEING MUCH MORE EASILY HANDLED, MORE EFFECTIVE
AND LESS DISAGREEABLE TO THE PATIENT THAN CREOSOTE, AND LEAVES

NO · ODOR · IN · THE · OPERATING · ROOM

ON making the application, gently clear the cavity without excavating, dry it with spunk or absorbent cotton, and then apply carbolized resin on a small ball of cotton, sealing over with a very thin sheet of wax. The sealing is not absolutely necessary, as the CARBOLIZED RESIN IS ALMOST INSOLUBLE. In most, if not all cases of exposed nerve, a few applications will so entirely destroy the sensitiveness that the tooth may safely be filled without capping. It is an invariable specific for "tooth-ache," so-called. . . .

In addition to its other valuable properties, Fletcher's Carbolized Resin will be found to be the

* * MOST RELIABLE STYPTIC * *

in obstinate cases of bleeding. A plug of amadou or cotton, wet with Fletcher's Carbolized Resin and packed in the cavity, will stop bleeding instantly in cases where other remedies have failed.

PRICE, 25 CENTS PER BOTTLE.

If it Becomes Crystalline or Too Thick for Use, add a Few Drops of Chloroform.

COPAL-ETHER VARNISH.

FLETCHER'S COPAL-ETHER VARNISH IS MUCH BETTER
THAN SANDARAC VARNISH FOR ALL PURPOSES.

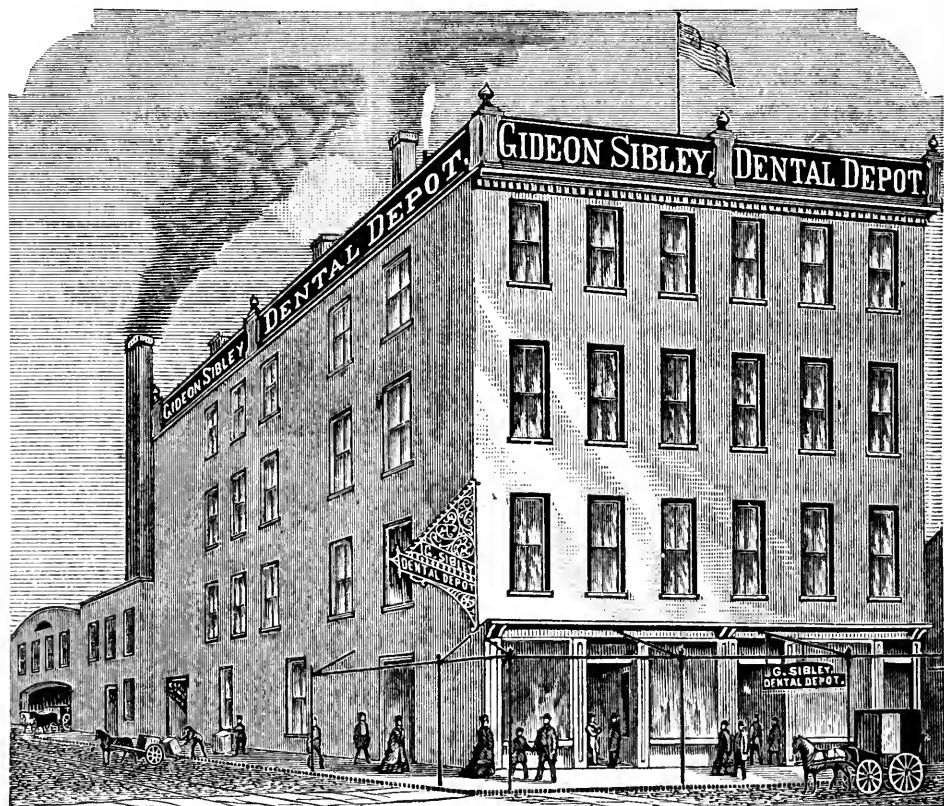
PRICE, 25 CENTS PER BOTTLE.

FOR SALE BY ALL DEALERS IN DENTAL GOODS.

JAMES V. LEWIS, No. 15 COURT STREET, BUFFALO, N. Y.

GIDEON SIBLEY,
 MANUFACTURER OF
 ARTIFICIAL TEETH
 AND DEALER IN
 DENTAL SUPPLIES,

THIRTEENTH AND FILBERT STS., - - PHILADELPHIA, PA.



It is gratifying to find, that after years of assiduous labor to produce the best Tooth made, their superiority is so universally acknowledged, and the rapid demand for them has necessitated large additions to our factory and salesroom.

POINTS ON WHICH WE SEEK COMPARISON:

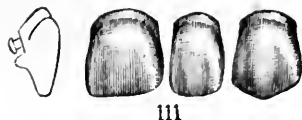
*STRENGTH, NATURAL SHAPES, TEXTURE, COLORS, LARGE DOUBLE-HEADED
 PINS, &c., COMBINED WITH OUR VERY LARGE ASSORTMENT
 OF MOULDS AND VARIETY OF SHADES.*

ASK YOUR DEALER FOR THEM, OR SEND ONE DOLLAR FOR A SAMPLE SET.

[ja85-1y] FOR SALE BY BUFFALO DENTAL MFG. CO.



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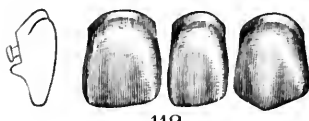
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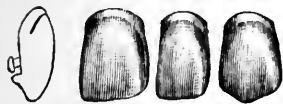
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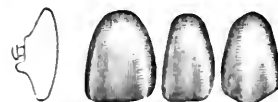
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GIDEON SIBLEY,
 MANUFACTURER,
 13th and Filbert Streets,
 PHILADELPHIA, PA.

• • • • •

Fletcher's • Asbestos • Fire

❁ FOR PRODUCING A PLEASANT RADIATED
HEAT FOR WARMING APARTMENTS. ❁

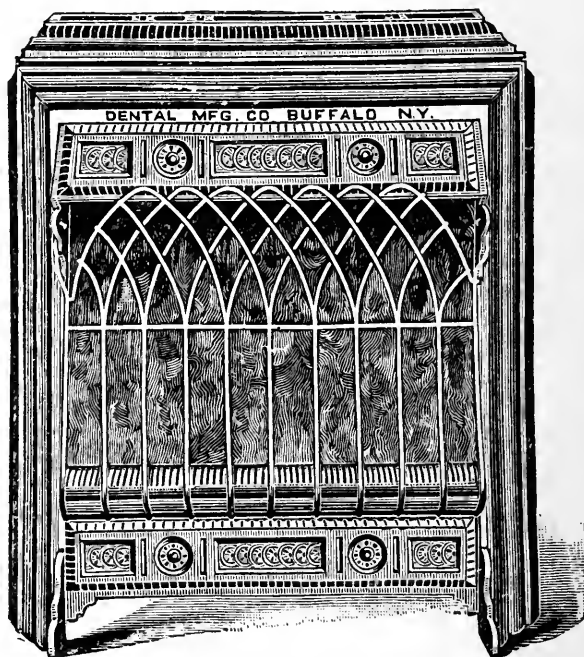
BEST IMITATION OF A COAL GRATE FIRE YET PRODUCED.
INVALUABLE FOR DENTISTS' OPERATING ROOMS.

A gas flame, from a special form of the Patent Radial Burner, streams up against a perpendicular fire surface of Asbestos fibre, which is almost instantaneously brought to an intense heat, giving a large percentage of the full effect due to the gas burnt.

The radiant heat evolved from the Fletcher Asbestos Fire renders it peculiarly applicable as a foot warmer, to place near the chair in dental operating rooms. Its use for this purpose has been very satisfactory, and is highly commended.

If used occasionally, and for a short time only, the products of combustion may be allowed to escape directly into the apartment; but for continuous use suitable flue connection should be made, as all gas heating apparatus, if used in small apartments without ventilation, will vitiate the air to a certain extent.

Gas consumption, about fifteen feet per hour.



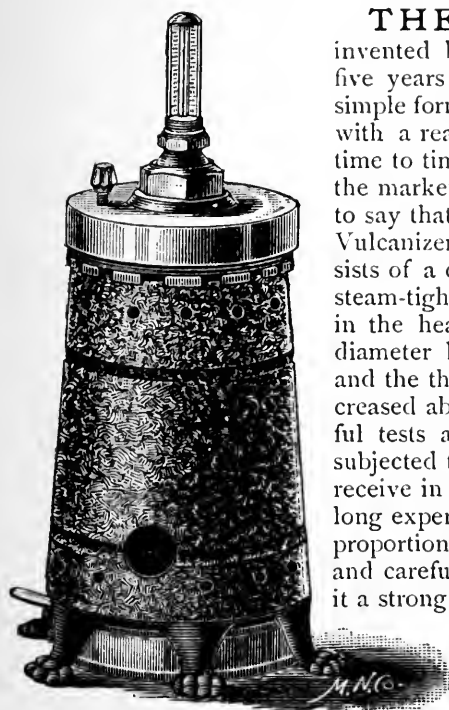
Patented January 1, 1884.

**Dr. G. C. DABOLL, BUFFALO, ARE USING THE ASBESTOS
Dr. W. C. BARRETT, BUFFALO, GAS FIRES IN THEIR OFFICES**

PRICE: Fletcher's Asbestos Fire, \$10.00
With Front, Sides and Top Nickel Plated, 15.00

MANUFACTURED ONLY BY THE **BUFFALO DENTAL MANUFACTURING CO.**

Dental · Vulcanizers.



THE WHITNEY VULCANIZER, invented by the late Dr. B. T. Whitney more than twenty-five years ago, has always had the name of being the most simple form of vulcanizer in existence, and it has always met with a ready sale. Attempts which have been made from time to time by different parties to place imitations of it upon the market, have met with very limited success, and it is safe to say that there are to-day more of the genuine Whitney Vulcanizers in use than of all other kinds together. It consists of a copper pot on to which a brass head is screwed, a steam-tight joint being made by means of a rubber packing in the head, which bears upon the edge of the pot. Its diameter has recently been enlarged from $3\frac{7}{8}$ to 4 inches, and the thickness of copper used in making it has been increased about one-third, thus insuring ample strength. Careful tests are given to each one as it is made, and each is subjected to a pressure of steam far above that which it would receive in use, and is afterwards thoroughly inspected. Our long experience in the manufacture of vulcanizers, the proper proportion of material in its different parts, and the accurate and careful workmanship bestowed upon it, combine to make it a strong, safe, durable and easily-managed machine.

HAYES' PATENT MERCURY BATH is applied to this vulcanizer, by which the bulb of the thermometer is protected from the destructive action of the steam upon it, and one of the most frequent causes of failure of the thermometer entirely obviated. It is also fitted with the B. D. M. Co.'s safety apparatus and safety disc, which will give way and allow the escape of the steam, if the temperature of the vulcanizer should be allowed, by forgetfulness or oversight, to rise to a dangerous extent. The pressure being thus relieved, a disastrous explosion becomes impossible.

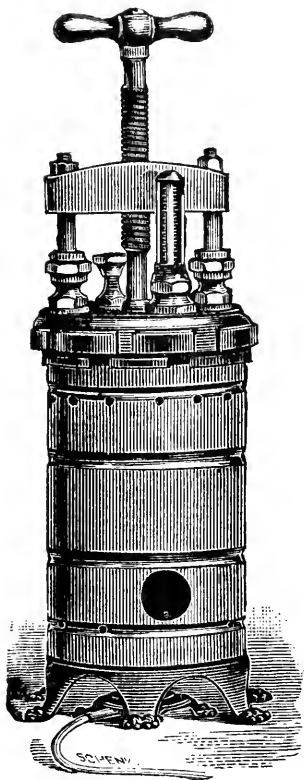
The Whitney Vulcanizer is closed by means of two wrenches, the "round" and "straight" wrenches, (Nos. 3 and 8). These form the most convenient means for the purpose, for the traveling dentist. For those having a regularly appointed laboratory, the bed-plate and wrench, (Figs. 9 and 10) are recommended. The bed-plate is fixed to the bench, in which a hole is cut for the reception of the vulcanizer pot. These are furnished with the vulcanizer instead of the round and straight wrenches, Nos. 3 and 8, without any advance in price. If a hole in the bench is not practicable, the Raised Bed-Plate (No. 16) will be furnished at an advance in price of 75 cents.

The heat is supplied by either gas, alcohol or kerosene. Apparatus for burning either is furnished as required.

We have succeeded in effecting arrangements with the manufacturers by which we are enabled to furnish a **SPECIAL PATTERN OF KEROSENE STOVE** with our vulcanizers, without the advance in price heretofore made in furnishing the Union Stove. This stove has a four-inch wick and will be found an efficient heater, much preferable to those heretofore used. This stove will always be furnished with this vulcanizer, unless other heating apparatus is specified. The Union Stove, if ordered, will be \$1.25 extra, as before.

PRICES.

No. 1, Vulcanizer, for one flask, Gas, Alcohol or Kerosene,	\$12.00
No. 2, Vulcanizer, for two flasks, Gas, Alcohol or Kerosene,	14.00
No. 3, Vulcanizer, for three flasks, Gas, Alcohol or Kerosene,	16.00
No. 1, Vulcanizer, with Union Kerosene Stove,	13.25
No. 2, Vulcanizer, with Union Kerosene Stove,	15.25
No. 3, Vulcanizer, with Union Kerosene Stove,	17.25



Patented May 25, 1875.

THE EDSON VULCANIZING AND CELLULOID APPARATUS COMBINED.—Desirous of keeping the profession supplied with all improvements in vulcanizing apparatus, we have made arrangements to supply the Improved Edson Vulcanizing and Celluloid Apparatus as shown in the annexed cut.

The flasks are closed inside the boiler after steam has been generated therein, by means of a screw and cross-bar, which operate a clamping apparatus. This apparatus is provided with a mercury bath thermometer.

The clamping apparatus has lately been remodeled and strengthened, and the lower end of the screw is now attached to the boiler head by a cap-nut, so that the clamping apparatus can be either closed or opened by turning the screw.

Our special kerosene heater is furnished with the Edson Vulcanizer unless either gas or alcohol is specified.

PRICES.

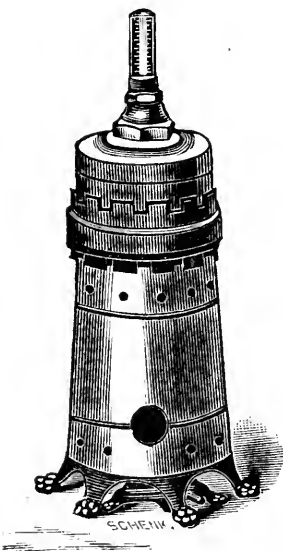
Edson Vulcanizing and Celluloid Apparatus complete, for Gas, Alcohol or Kerosene, \$25.00
With Union Kerosene Stove, extra, 1.50

LARGE SCREW-TOP VULCANIZER.—This is made from the Edson patterns, without the clamping arrangement. It is $4\frac{3}{8}$ inches diameter, large enough to take the B. D. M. Co.'s "Large" flask if desired for dental purposes, and can be made to order, of any depth required for special use, such as rubber stamp work.

This and the Edson Vulcanizer are closed by means of the bed-plate and wrench, Nos. 1 and 2, page 15 of catalogue.

PRICES.

No. 2, Large Screw-Top Vulcanizer, \$16.00
No. 3, Large Screw-Top Vulcanizer, 18.00



Patented May 19, 1868.

THE WOODARD SELF-PACKING VULCANIZER.—The flasks are placed in this vulcanizer without being closed, and are gradually brought together by the pressure of the steam, as the vulcanizer is heated. This is accomplished by means of a piston which receives the pressure of the steam, and operates in a cylinder formed in the vulcanizer top. The flasks are placed in a stirrup which is connected with the piston. The flasks are closed gradually, as the steam pressure rises, and at a higher temperature than when they are closed in the usual way. The rubber is thus rendered softer and more yielding, and one fruitful source of the breakage of blocks is thus obviated.

Only one size of the vulcanizer is made, viz.: $3\frac{3}{8}$ inches diameter, for two flasks. The cover of this vulcanizer screws upon the pot in precisely the same manner as the "Whitney."

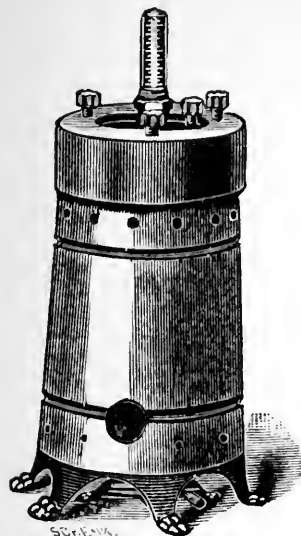
Hayes' Patent Mercury Bath is adapted to this vulcanizer, by which the liability of the thermometer to accident is very much decreased. The heat is applied by either gas, alcohol or kerosene, a special kerosene stove being furnished unless other apparatus is specified. The Union Stove, if ordered, is \$1.25 extra.

PRICES.

Woodard Vulcanizer, for two flasks, complete, Gas, Alcohol or Kerosene, \$24.00
Union Kerosene Stove, extra, 1.25

THE HAYES VULCANIZER.—THE HAYES COPPER BOILER

consists of a copper pot, a cover containing the packing joint, and a collar, which screws upon a threaded ring which encircles the pot, and bears upon the cover to tighten the joint by means of three set-screws, which are plainly shown in the engraving. This fastening has proved to be the most substantial of any, and can be recommended as *absolutely steam-tight*.



Pat. Mch. 5, '61; July 8, '62; Apr. 3, '66.

The thermometer bulb is immersed in HAYES' PATENT MERCURY BATH, by which it is perfectly protected from the corrosive action of the steam.

Two sizes of the Hayes Copper Boiler are made, which are respectively, 4 inches and 4½ inches in diameter. The 4-inch size, which is generally employed by dentists, can be furnished to take one, two, or three flasks, as desired. The 4½-inch size is kept in stock either for two or three flasks, and can be made of extra length for special purposes.

THE IRON CLAD BOILER is made precisely like the Copper Boiler above described, excepting that the copper pot is covered by a shell of malleable iron strong enough to withstand many times the pressure of steam used in vulcanizing. It may, therefore, be safely used, notwithstanding the weakening of the copper by corrosion. It is only made of 4 inches diameter, for one, two or three flasks.

We have succeeded in effecting arrangements with the manufacturers by which we are enabled to furnish a SPECIAL PATTERN OF KEROSENE STOVE with our vulcanizers, without the advance in price heretofore made in furnishing the Union Stove. This stove has a four-inch wick and will be found an efficient heater, much preferable to those heretofore used. This stove will always be furnished with this vulcanizer, unless other heating apparatus is specified. The Union Stove, if ordered, will be extra as before, viz.: No. 1, \$1.25; No. 2, with two wicks, \$1.50.

PRICES.

No. 1, Copper, Gas, Alcohol or Kerosene,	\$12.00
No. 2, Copper, Gas, Alcohol or Kerosene,	14.00
No. 3, Copper, Gas, Alcohol or Kerosene,	16.00
No. 2, Large Vulcanizer, 4½-inch diameter,	20.00
No. 3, Large Vulcanizer, 4½-inch diameter,	22.00
With Union Kerosene Stove, extra,	1.50
No. 1, Iron Clad, Gas, Alcohol or Kerosene,	15.00
No. 2, Iron Clad, Gas, Alcohol or Kerosene,	17.00
No. 3, Iron Clad, Gas, Alcohol or Kerosene,	19.00

THE PEER VULCANIZER.—The

cover is secured by three bolts, pivoted in a ring surrounding and securely brazed to the edge of the pot. As will be seen by reference to the engraving, they can be thrown out of the way when it is desired to move the cover, by merely slackening the nuts.

Only one size of this vulcanizer is kept in stock, viz.: 3⅞ inches diameter, for two flasks.

Hayes' Patent Mercury Bath is adapted to this vulcanizer, by which the liability of the thermometer to accident is much decreased. It is also supplied with the B. D. M. Co.'s safety disc apparatus.

The heat is applied by either gas, alcohol or kerosene. The B. D. M. Co.'s special pattern of kerosene stove is adapted to this vulcanizer, and will be furnished with it unless other heating apparatus is specified in the order.



Patented April 3, 1866.

PRICES.

No. 2, Peer Vulcanizer, Gas, Alcohol or Kerosene, \$14.00
Union Kerosene Stove, extra, 1.25

IF YOU WANT

FORCEPS—CORRECTLY MADE,
EXCAVATORS—KEEN CUTTING AND WELL TEMPERED,
PLUGGERS—ALL KINDS, FINELY SERRATED,
AMALGAM INSTRUMENTS—EVERY KIND,
BONWILL ENGINE PLUGGER POINTS,
ELECTRIC Mallet PLUGGERS,
AUTOMATIC PLUGGER POINTS PROPERLY FITTED,
ENAMEL CHISELS THAT WILL DO THEIR WORK,
RUBBER DAM FORCEPS AS THEY SHOULD BE,
FOIL CARRIERS—ALL KINDS,
ENGINE BURS—BEST QUALITY, OR
REPAIRING CAREFULLY ATTENDED TO,

SEND TO

LUKENS & WHITTINGTON,

DENTAL INSTRUMENT MANUFACTURERS.

626 RACE STREET, - - PHILADELPHIA, PA.

LAWRENCE'S AMALGAM.

"THE OLD RELIABLE."

This Amalgam has received the endorsement of the Profession at large for over forty years, which would seem to render any remarks as to its excellence superfluous. Retail price, Three Dollars per ounce.

Purchase only of reliable dealers, their agents, or of the inventor and only manufacturer,

AMBROSE LAWRENCE, 476 Columbus Ave., Boston, Mass.

Low's Counter-Irritant Dental Plasters.

The application of counter-irritants to the gum, in the form of a plaster, has some advantages over the ginger or pepper bag, as the plaster can be made to adhere to the gum, and is less bulky. It will, therefore, easily retain its place, and the effect will be more prompt and certain, the action of the remedies not being interfered with by a constant wash of saliva.

It is questionable if one degree of stimulation should be expected to answer the purpose equally well for all stages of pericemental inflammation, and in order to meet the varying indications which are presented, three different plasters have been devised, as follows:

PLASTER No. 1 is a very mild stimulant, suitable rather for warding off threatened inflammation, than for reducing it when present. It is recommended for use after filling pulpless teeth or setting artificial crowns.

PLASTER No. 2 is a more rapid stimulant, composed of capsicum, and is applicable to all cases when it is desired to bring about resolution instead of hastening suppuration.

PLASTER No. 3 is a Mustard Paste, and is by far the best application when suppuration is inevitable and the desire is to hasten the discharge and relieve the patient.

Each bunch of six plasters is wrapped in tin-foil to prevent deterioration by exposure to the air—making a convenient package for the patient.

They are put up in boxes containing nine dozen of either kind or assorted. Price, \$1.00 per box.

Prepared by DR. F. W. LOW, Attica, N. Y.

BUFFALO DENTAL MFG. CO, General Wholesale Agents.

SEND FOR

NEW CATALOGUE

OF

Dental Specialties.

BUFFALO

DENTAL MANUFACTURING

COMPANY.

DRESSING

FOR

EXPOSED PULP

AND

Sensitive Teeth,

PREPARED BY

DR. A. TERRY, . . . NORWALK, OHIO.

PRICE PER BOTTLE, \$1.50.

For Sale by BUFFALO DENTAL MFG. CO.

REPAIRING.

Prices of Parts and Repairs for
Automatic Pluggers.

New Spring Catch,	\$0.75
New Hammer Catch, . . . . .	.30
New Ring, . . . . .	.50
New Socket,	2.00
New Sleeve,	2.00
New Case,	4.00
New Hammer Spring, . . . . .	.25
New Trip, or Inclined Plane, . . . . .	.50
New Hammer, . . . . .	.50
New Tension Knob,	1.00
New Follower, . . . . .	.25
New Collar, . . . . .	.25
Nickel Plating,	1.00

Reduction in Price.

PRACTICAL DENTAL
METALLURGY.

By THOS. FLETCHER, F. C. S., Warrington, Eng.

A concise treatise on the Physical Properties of
Metals and Alloys of actual or possible
use to Dentists.

PRICE, \$1.75

FOR SALE BY

Buffalo Dental Manufacturing Company.

PHÉNOL SODIQUE

Hemostatic, Antiseptic and
Disinfectant.

Highly recommended as an astringent and styptic
application to check excessive bleeding after
extraction, and to prevent subsequent
soreness of the gums.

PRICE:

Per bottle, \$0.50
Per dozen, 4.00

IRON

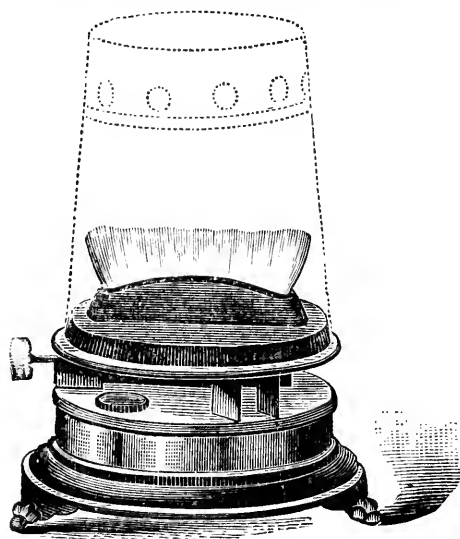
Bracket Drawers

A VERY CONVENIENT DEVICE
WHEN A RECEPTACLE FOR
SMALL ARTICLES IS WANTED
UNDER A BRACKET, TABLE,
SHELF OR BENCH.

They turn out on a center. Size, 4 x 3½ x 1 inches.
Original Price, 60 cts. Price now, 25 cts.

BUFFALO DENTAL MFG. CO.

B. D. M. CO.'S
Kerosene Stove
 FOR
VULCANIZERS.



A special pattern, with a 4-inch wick. This stove is now furnished with all of our vulcanizers, when ordered "for kerosene," without advance in price.

In ordering, state whether for No. 1, No. 2, or No. 3 Vulcanizer.

PRICE, including jacket, . . . \$1.50

AMALGAMS.

	PER OZ.
Fletcher's Platinum and Gold, . . .	\$4.80
Fletcher's Extra Plastic,	5.00
Blackwood's Amalgam,	4.00
King's Amalgam,	3.00
Buffalo Amalgam,	2.00
Chicago G. & P. Amalgam,	4.00
Oliver's Amalgam,	3.00
Holmes' Amalgam,	4.00
Lawrence's Amalgam,	3.00
Sterling Amalgam,	3.00
Par Excellence Alloy,	3.00
Globe G. & P. Alloy,	3.00

OFFICE PREPARATIONS.

	PER BOTTLE.
Liquid Silex,	\$0.25
Ethereal Varnish, . . . . .	.35
Sandarac Varnish, . . . . .	.25
Wood Creosote, . . . . .	.30
Von Bonhorst's Anaesthetic,	1.50
Listerine,	1.00
Phenol Sodique, . . . . .	.50
Carbolized Resin, . . . . .	.25
Copal Ether Varnish, . . . . .	.25

FLETCHER'S
Glass Mortars & Pestles
 FOR
MIXING AMALGAMS.

These mortars are $1\frac{3}{4}$ inches outside diameter, $1\frac{1}{2}$ inches high, ground inside. Pestles for firm holding, $4\frac{1}{2}$ inches long.

PRICE, each, 50 cents.

NOTICE.
PRECIOUS METALS.

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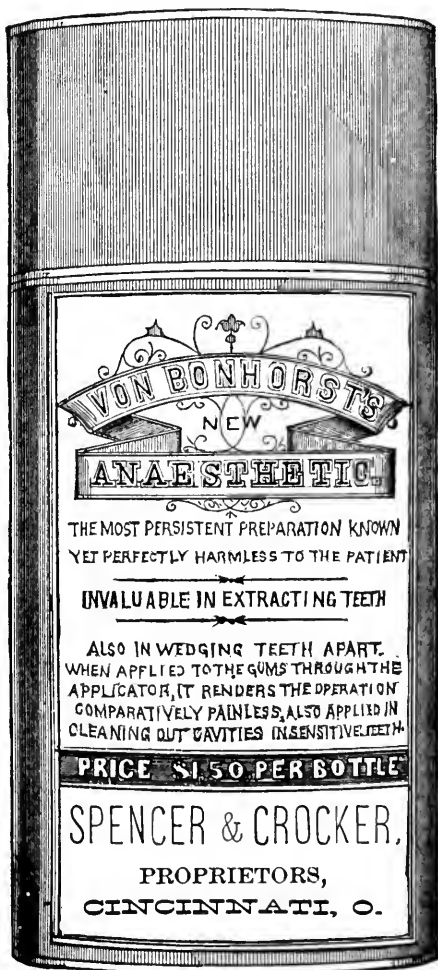
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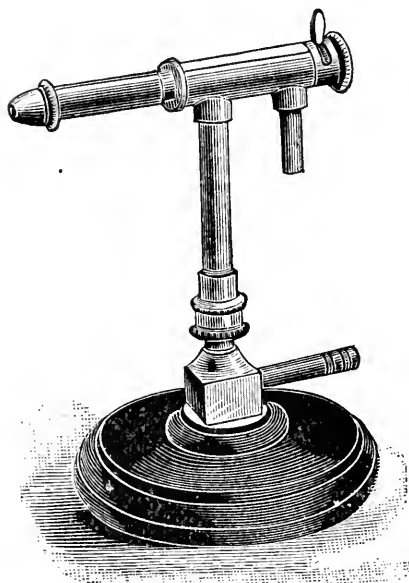
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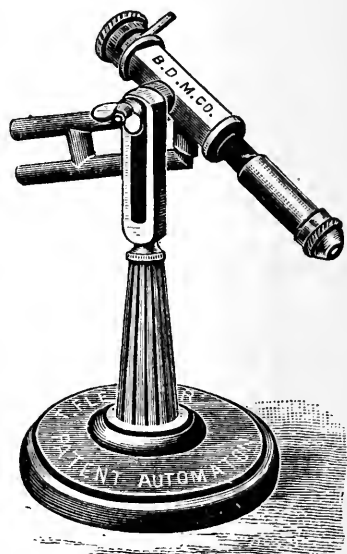
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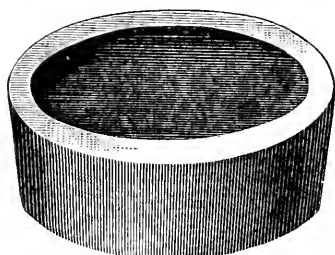
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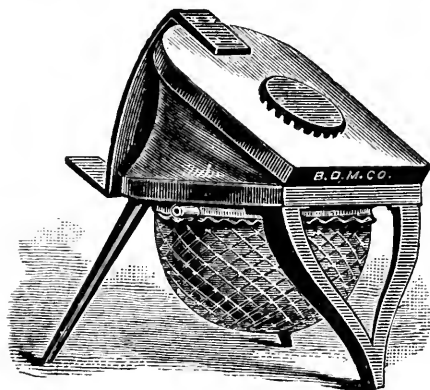
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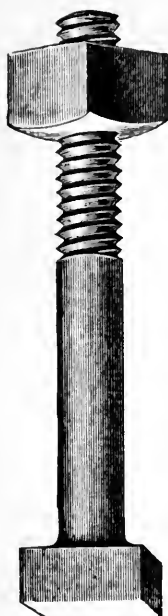
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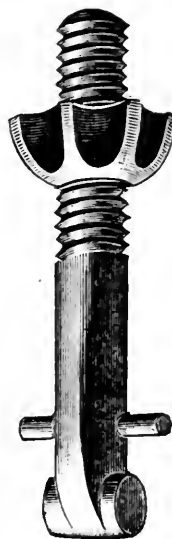
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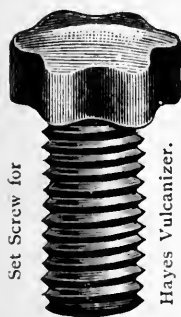
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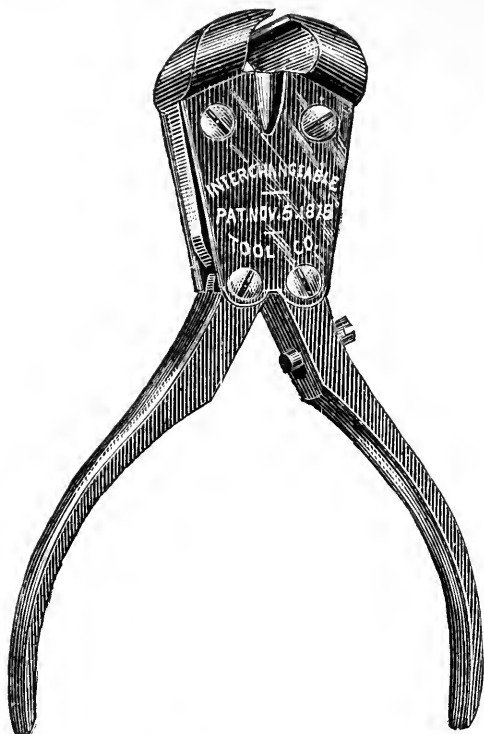
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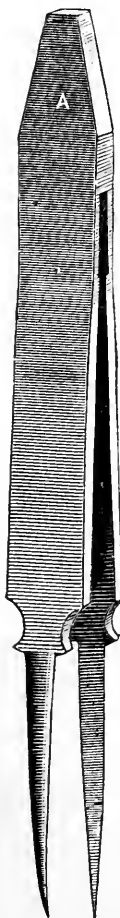
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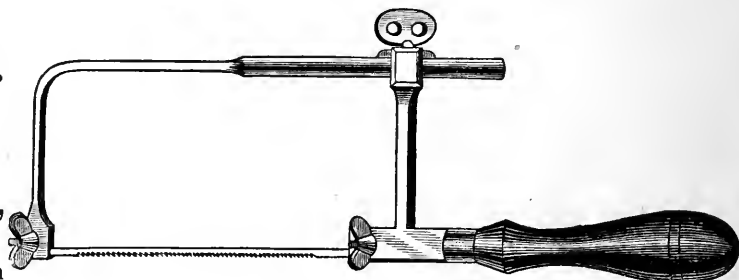
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THE DENTAL ADVERTISER.

VOL. XVII.—BUFFALO, N. Y., APRIL, 1886.—No. 2.

NEW EXPERIMENTS AND OBSERVATIONS ON HYDROBROMIC ETHER OR THE BROMIDE OF ETHYL AS AN ANÆSTHETIC.*

BY LAURENCE TURNBULL, M. D., PH. G.

Aural Surgeon to Jefferson Medical College Hospital; Physician to the Department of Diseases of the Eye and Ear, Howard Hospital, Philadelphia.

The hydrobromic ether or bromide of ethyl was discovered by Serullas, in 1827, but received no special attention until Dr. Thomas Nunnelly, of Leeds, reported some experiments made with it on animals in 1849. Dr. Nunnelly brought the subject again before the profession, by a paper read at the meeting of the British Medical Association in 1865, in which, speaking of it in conjunction with another anæsthetic, he said he had for some time employed the one or the other in all the principal operations at the Leeds General Eye and Ear Infirmary. This was at a time when chloroform held such complete sway in England, that no importance was attached to Nunnelly's experience or experiments. He had no one to follow him in using it; and we hear no more of it until 1876, when some experiments were made with it in France, by Rabuteau, on the lower animals; but evidently without a knowledge of the fact that this had been done previously in England by Nunnelly.

* Reprinted, with additions and corrections, from the *Journal of the American Medical Association*, November 21, 1885.

I then took the agent up without the knowledge of the experiments of Dr. Nunnally. I had it made in Philadelphia by Professor Remington, and with two friends began experimenting in September, 1877; using it first on myself, and then upon my patients. When pure, bromide of ethyl is a volatile, colorless and almost unflammable liquid, contrasting favorably in this respect with sulphuric ether, the highly inflammable and explosive properties of which are well known. It has a hot, but saccharine, taste; its specific gravity is 1.42, and it boils at 105.8° Fahrenheit. Its boiling point and density are therefore intermediate between those of chloroform and ether. After satisfying myself as to its efficiency and safety as an anæsthetic by experiments upon myself and others, I laid the subject before the Pennsylvania State Medical Society in 1878, and a record of ten cases, with my conclusions, was published in the volume of their transactions for that year. In August, 1879, I brought it before the British Medical Association at Cork; and in September of the same year, I presented a report of one hundred cases before the International Medical Congress at Amsterdam, to which I was a delegate from the American Medical Association. Up to March, 1879, when the second edition of my work on anæsthetics went to press, I had published a report of one hundred and twenty-five successful cases in quite a variety of surgical operations, and had not only employed it at my daily ear clinic, but also in the Jefferson Medical College Hospital; and I administered it in April, 1879, to a patient of Dr. Samuel W. Gross, at the public clinic, when he (Dr. Gross) removed a hyoid cyst from in front of the neck of a child. Dr. R. J. Levis, who was at this clinic, for the first time saw it employed, and became much interested in its use.

I thus compelled chemists to make it, by producing a demand for it; and gave them, through Dr. Green, a good formula for obtaining it free from impurities. I induced surgeons all over the country to try it, and especially the surgeons of this city, by bringing it in every way before their attention. The whole number of cases in which it has been employed by myself and friends was, up to June, 1880, some eight or nine hundred.

I cannot but feel disappointed that two deaths, not produced by it, should have been associated with it,* as advantage will be taken of such accidents by those having a prejudice against the ether, to condemn it on theoretical grounds.† In several instances recently the use of this anæ-

*The bromide of ethyl as an anæsthetic, by Marion Sims, M. D., LL.D., *New York Medical Record*, April 3, 1880.

† In the discussion following the report of the fatal case by Dr. Sims to the New York Medical Society, Dr. Squibb undertook to account for the poisonous effects of bromide of ethyl by assuming it to be a loosely molecular article, easily decomposed; that thus its administration is prone to be followed by an impregnation of the system with bromine;

thetic has been attended with persistent vomiting, though in the thousands of cases in which it has been employed, chiefly in Philadelphia, in not one single instance has it caused cerebral trouble, or any of the symptoms produced by the action of free bromine, which are as follows: when dogs are confined in an atmosphere of bromine vapor, they suffer a profuse secretion from the eyes, nostrils and fauces, with cough, hoarseness, and dyspnoea. I have experimented upon frogs, cats, dogs, rabbits and various other animals, by subjecting them to an atmosphere highly charged with the vapor of hydrobromic ether, and in rare instances were there the effects as described above.

In the case of death under the employment of this agent in the hands of Dr. Levis, we do not think he was doing justice to it in subjecting the new anæsthetic to this most severe test. He knew the extreme debility of the patient, and that the most simple nervous shock would render him liable to death. Hundreds of patients have thus died. Again, when ordinary ether, chloroform, or other anæsthetics cause fainting, which was no doubt the result in this case, artificial respiration must be resorted to. We are reliably informed that in this instance the movement of the chest walls forced *the pus which was in this man's lungs into his bronchial tubes and suffocated him*. We are also very sorry that the valuable agent, nitrite of amyl, which has been found useful in such cases, was not employed.

The following report of the case will be of interest:

“PHILADELPHIA, June 2, 1880.

“Deputy Coroner Beam made an investigation of the circumstances, as reported in *The Times*, of the death of William Linderman, eighteen years old, of Schuylkill county, while upon the operating table at the Jefferson College Hospital under the influence of the new anæsthetic, bromide of ethyl, and about to be treated for stone in the bladder. He had been for about sixteen weeks under the care of Dr. R. J. Levis, one of the strongest advocates of the new anæsthetic, and was taken to the hospital by his direction. Linderman's health was very poor at the time. Dr. Ames, who administered the bromide, said an incision had not yet

and that if it remained as bromide of ethyl in the system it might not be harmful. This theory has been shown to be based on insufficient grounds. In the first place, Professor Jungk has shown that bromide is not “a loosely molecular article;” that in fact it is a very stable salt (for a salt it really is), and very difficult of decomposition; much more difficult than chloroform. In the second place, the assumption that anæsthesia is due to a breaking up of the anæsthetic into its elements is nothing more than a hypothesis, and one, too, which has little or nothing to support it. The fact that one of the characteristics of bromide of ethyl is that it is perfectly unirritating to the bronchi, goes to show that it is not decomposed: if it were, the bromine in its composition, one of the most irritant of substances, would certainly manifest itself in its effects on the air passages.

been made, but Dr. John B. Roberts said that there had. The patient was in such a condition that something had to be done, because he could not tide over the hot weather—96° to 98° in the shade.

“Dr. J. G. Lee, the coroner’s physician, testified that he found the brain congested, *the lungs far advanced in consumption, and the kidneys and liver enlarged* and two large encysted stones in the bladder. His opinion was that they could not have been safely taken out. *Linderman could not have lived over a week or two at any rate.* Dr. Lee said further, that he had experimented with the bromide on animals without bad results. In his opinion death resulted from exhaustion and prostration, the results of phthisis. The jury took the same view in their verdict.”

As is well observed by Dr. Henry M. Lyman, “All experience shows that the administration of anæsthetics to certain patients is attended with danger. Even sulphuric ether may prove fatal if the kidneys are seriously damaged, and pulmonary disorganization is a well-known source of danger during the inhalation of anæsthetic vapor. The administration of chloroform to such a patient would be a very hazardous undertaking. The fatal results in these cases cannot be charged against the particular anæsthetic employed, but rather against the exhibition of any anæsthetic agent whatever.”*

In some recent experiments on animals, I crowded four ounces (the quantity stated to have been used by Dr. Sims,) upon a dog by means of a tin inhaler, until he became apparently dead, with no perceptible action of the heart or lungs; but the expression of his eye was clear, and the pupil was dilated; while there was no secretion from the eyes or nostrils. The apparatus was removed in the space of four minutes, and he was exposed to the air, when at once he began to breathe, and by the end of six minutes, he had almost entirely recovered consciousness. The dog did not seem much inclined to move for ten or twelve minutes afterwards. While this dog was only partially under the influence of this anæsthetic, having at first caught the inhaling apparatus between his teeth, there was a good deal of rigidity, and slight tetanic movements of the extremities, but this was overcome by the free use of the ether.

Now, had we been using chloroform, just before we would have been ready to perform any experiments upon the animal, he would have been dead; and neither the removal of the anæsthetic nor exposure to air, would have been of any avail. Again, if Squibb’s rectified and absolute ether had been employed, we must have super-saturated the animal, and been annoyed by the expectoration of large quantities of mucus, which in one recent experiment by me was followed by death. Then we frequently have seen tetanic convulsions, with great reduction of temperature, requiring several assistants to hold the patient, from the use of

* “Artificial Anæsthesia and Anæsthetics.” Pages 220, 221.

ordinary ether. The rapidity of the anæsthetic action of hydrobromic ether and its rapid elimination from the system by the lungs, are two of its chief merits for all operations that are not prolonged. *We recommend pure hydrobromic ether in operations not lasting over forty minutes.* For operations lasting one or two hours, we would advise the additional use of sulphuric ether; commencing after thirty or forty minutes' exhibition of the bromide of ethyl.

There is one great advantage in the use of this agent, that the administrator must attend to the anæsthetic all the time; he cannot watch the operation and forget the patient for a few seconds; his whole attention must be given to keep up its action. We believe that patients have sometimes been stifled by close pressure of the napkin, wet with the water present in ordinary ether, by the carelessness of the person giving it; whose attention has been given to the operation, rather than the patient.

As an anæsthetic in labor it has peculiar advantages, in that it is so rapid in its effects: the patient is comforted between the pains, but never passes into such a state of profound anæsthesia that she is not aroused by the expulsive effort, and has all her consciousness about her; and there are none of the depressing effects of ether or chloroform. It is also most valuable in these cases when it becomes necessary to change the position of the child; also in bringing forward the neck of the uterus into its proper position.* In none of my cases was there disturbance of the bowels, or pain in the back or head.

Müller, of Berne, speaks well of this obstetrical anæsthetic, which he has used in sixteen cases of primiparæ and six of multiparæ. Reddening of the face and acceleration of the pulse were frequently noted, thus giving the assurance that cerebral anæmia, as in the chloroform-syncope, need not be feared. The peculiar analgesic virtues were gratefully commented upon, especially by multiparæ. Hæckermann and Parnemann (Schmidt's Jahrbuecher No. 12, 1884,) express themselves in equally eulogistic terms of the anæsthetic in confinements.

To the country practitioner, who is obliged to extract teeth or perform any of the minor operations in surgery, it is a great boon, as it acts like nitrous oxide gas. It is well where a number of teeth are to be extracted, that a prop of hard wood attached to a string should be used; so as to prevent such an accident as once occurred in Philadelphia under the use of nitrous oxide gas: the swallowing of a prop of cork. It frequently happens in the use of hydrobromic ether, that when narcotism is not very profound, that the muscles of the patient become rigidly contracted. This condition occurred in a recent case, when we administered $\frac{3}{4}$ i of this anæsthetic; the operator's finger was caught and pinched, as also his forceps; and

* See pamphlet on the "Bromide of Ethyl as an Anæsthetic in Labor," by E. E. Montgomery, 12 pp. New York: W. Wood & Co., 1885.

yet before operating we could touch the cornea with impunity. Although the impression passed away very rapidly, twelve teeth were extracted with entire success, the patient not feeling the pain, and promptly recovering consciousness.

In the following case the patient went under it very kindly: The patient was a man of very nervous temperament. With three drachms of hydrobromic ether, anæsthesia was produced without any struggling; and in four minutes from the time he had commenced to inhale it, the dentist had extracted ten teeth, and he had fully recovered consciousness, and without nausea; although he had just eaten a breakfast of solid food.

In a recent case of cataract extraction, the patient went beautifully under the influence of the anæsthetic, extraction was accomplished, and the patient recovered so as to be able to count fingers, yet owing to some strong coffee which she drank, from dyspeptic symptoms, or the swallowing of water soon after the operation, she became very sick at her stomach, and vomited for almost twenty-four hours; and yet the case did well. In a case of operation for torticollis, for a woman, she swallowed so much air with the ether, that as a consequence she complained of pain of a hysterical character, in lower part of the abdomen; the same which is often the result when nitrous oxide gas is inhaled, and too much air admitted.

In a letter received from the late Dr. J. Patterson Cassells, of Glasgow, a distinguished aurist and a surgeon to the celebrated Glasgow Infirmary, he writes that he has used a specimen of the hydrobromic ether, which I gave him at Cork, as vapor, in diseases of the middle ear, and has also employed it as an anæsthetic with success.

As I have before stated,* "*no anæsthetic can be used with absolute safety:*" all will kill. Chloroform kills, in round numbers, about one in every three thousand. Pure ether† is, next to nitrous oxide, the safest anæsthetic; only seventeen cases of death, and many of these doubtful, having been reported from its use. But it requires boldness and freedom in its administration; if slowly or ineffectually administered it is apt to produce a free secretion of bronchial mucus, which occasions troublesome coughing. If nitrous oxide is administered alone as a prelude to ether, the secretion of mucus is less troublesome, but there is a great amount of venous congestion and the tissues become gorged with blood, so that every incision tends to bleed. At times, also, wild excitement is produced

* See "A Presumable Ether-Death from Heart Failure," by John B. Roberts, M. D., *Medical News*, September 27, 1884; by the same author, "Ether-Death," *Medical Times*, June 4, 1881. "Case of Death following the Inhalation of Chloroform," reported by P. L. Helsman, M. D., Albany (Ga.) *Medical News*, September 27, 1884.

† Ether fortior, liquid, 94 per cent. of oxide ethyl, 6 per cent. of alcohol, and a little water.

by the gas. Some surgeons use the mixture which is known as A. C. E., which contains one part by measure of absolute alcohol, two of chloroform, and three of Squibb's ether. This is not simply a mixture; the absolute alcohol,* 99.4 per cent., causes a solution of the other two, and they evaporate together. But the mixture should be administered freely from a cone of felt or flannel, with a paper covering, and the desired effect should be produced as rapidly as possible. The best results are by the agents which produce rapid effects, and which are as rapidly recovered from. No other has produced such rapid anæsthesia as the hydrobromic ether, and it is the most rapidly recovered from.

There are certain conditions of the system which forbid the use of anæsthetics. Again, there are certain of this class of agents that should not be employed in prolonged operations, as, for instance, the "bichloride of methylene," bichloride of ethedene, and bromide of ethyl. One or two deaths have followed the improper use of each of these agents, even when recommended by a committee appointed by the British Medical Association and by Sir Spencer Wells.† As the result of the observations and experiments with the bromide of ethyl, my conclusions have been that one hour is the longest time that a patient can remain under the influence of this anæsthetic with safety. In the case of potent remedies like morphine, atropine, hydrocyanic acid, etc., no one will attempt to ignore, or refuse to use such valuable remedies because in certain individuals and under certain conditions of the system, they produce death.

Can we in all cases rely on the experiments on animals as a true and absolute guide to determine our course in the human being? We think not; for it is a well-known fact that many animals eat plants which are deadly poisons to man, and certain anæsthetics are fatal to dogs.‡ Again, certain salts taken with impunity by man are poisonous to animals. The results of the prolonged experimental use of anæsthetics in the laboratory, even when of two hours'§ duration, cannot be taken as unquestioned as the results obtained by numerous careful observers on themselves and others. Clinical experience has now reached at least two thousand|| well

* Specific gravity, .0716, at 77° F.

† Turnbull on "Artificial Anæsthesia," second edition, 1879.

Messrs. Regnault and Villejean (*Lancet*, July 6, 1884,) have confirmed my statements (see page 65 of the last edition of my work,) that the so-called "chloride of methylene" is a mixture of chloroform and methylic alcohol.

‡ Dr. B. A. Watson, Jersey City. "An Experimental Study of Anæsthetics." *Medical News*, p. 313, May, 1878. Method not given.

§ "Two New Anæsthetics," by J. C. Reeve, M. D., Dayton, Ohio. *Cincinnati Lancet and Clinic*.

|| Dr. Chisholm, of Baltimore. *Maryland Med. Jour.*, January, 1883. Dr. Prince, of Jacksonville. *St. Louis Med. and Surg. Jour.*, October, 1883, and Dr. L. Turnbull, of Philadelphia. *Medical Bulletin*, June, 1880.

authenticated cases in which the bromide of ethyl has been employed with safety since 1880, when the two deaths were reported.

The following trials of this new anæsthetic were made to test its merits and to obtain personal experience of its effects. They were made by a gentleman very familiar with all the other anæsthetics, and his experience should be worthy of confidence.† For the record of occurrences after loss of consciousness, and for care and attention during administration, he was indebted to his friends, Drs. Pilate and Conklin :

First Experiment.—March 14th. Four hours after eating a moderate breakfast he proceeded to inhale the bromide of ethyl, in the recumbent position ; and from a bottle just opened, labeled “ 1 oz. bromide ethyl,” about one-fourth of the contents was poured into an Allis ether inhaler. The first and immediate sensations upon inhaling it were a sharp pungent impression on the air passages, a sense of warmth rapidly extending, and exhilaration. With the second inspiration he felt a decided influence upon the brain, and began to talk ; anxious to continue speaking as long as possible, and to state his sensations. A rapid beating in the ears is a constant symptom with him in taking chloroform, and immediately precedes entire loss of consciousness. He marked its presence now, and also its early appearance. It could not have been later than the third, or possibly the fourth, inspiration when he noted it, and this, as with chloroform, was the last sensation.

Upon opening his eyes after recovery from the anæsthetic, he immediately collected himself and could remember all ; could talk clearly, and had no confusion of thought. He felt a slight sense of nausea and a feeling of languor. Eight minutes afterwards he got up and walked about without dizziness, and was confident he could have done so sooner. He did not attempt it sooner because he felt that sickness would ensue if he arose. The feeling of nausea remained until he commenced eating his next meal, about forty minutes later.

Second Experiment.—Pulse at beginning, 80 ; he having just ascended a flight of stairs. Two drachms administered. Symptoms began to be manifested after two respirations. Spoke of general warmth, pleasant sensations and beating in the ears. Anæsthesia produced in one minute and a quarter ; in another quarter minute it was profound, as tested by a knife point. Pulse during the first minute ran up to nearly 100, then fell during the next minute to about 70, feeble and intermittent. Pupils unchanged ; normal ; no struggling or excitement, but tetanic clutching of the inhaler so that it could be gotten away only with difficulty. The anæsthesia lasted one minute and a half. He then awakened without mental confusion. Pulse seven to eight minutes later, 64. He was not satisfied with this experiment, particularly in regard to the irregularity

and intermittence of the pulse: not a very assuring symptom in anæsthesia, and a result not agreeing with other observations. He had a suspicion from this fact, and from the nausea, that the specimen used was not pure. The bottle bore the name of a house which is always a guarantee of the good quality of medicines; but in the early period of manufacture of a new article, it would not be surprising if perfection was not immediately attained; he therefore obtained another specimen,* and one week after the above trial again inhaled it.

Third Experiment.—Being in the recumbent position, four hours after eating, one drachm, by measure, was poured into Allis' inhaler. He tried to take it slower this time, and count the respirations aloud to mark when conscious action ceased. He immediately felt the same grateful and pervading glow of warmth all over the body; counted to the seventh respiration; beating in the ears was again the last recognized impression. Pulse before, 80; at the end of the first minute, 120; one and a half minutes, at the rate of 100; at the end of two minutes, 78; no irregularity or intermittence; pupils unaffected; totally unconscious in one minute. Consciousness returned in three minutes.

It was his design to push the inhalation farther this time, and to test the muscular relaxation as well as to decide in regard to the irregularity of the pulse. Feeling that this had not been done, after about fifteen minutes he took it again.

Fourth Experiment.—Two measured drachms were poured on the inhaler, and he placed it over his mouth and nose. The impression was much stronger on the nose and air passages, and the first inspiration made him cough. He then counted to the third inspiration, and was gone. Pupils the same as before, unaffected; pulse before taking, 78; at the end of the first minute, 124; one and a half minutes, 100; and of two minutes, 78; no irregularity or intermittence. Anæsthesia in one minute. At the end of three minutes from the time of beginning he got up and walked across the room, and could have remained up. As an effort at prolonged anæsthesia this was not, therefore, a success. In eighteen minutes he was on his way driving to see a patient. He had not the slightest nausea after these two inhalations; felt, if anything, better than before.

Fifth Experiment.—His next trial of the agent and first attempt at administration, was not satisfactory. The patient was a man aged about 50, a wiry, muscular fellow, of the type and build likely to give troublesome manifestations with any anæsthetic. He was placed on the table for an operation for hæmorrhoids, by Dr. Conklin, who had brought with him for the operation a large conical sponge, with which he was in the

*From the house of John Wyeth & Bro., Philadelphia.

habit of giving the A. C. E. mixture. Upon this he poured two drachms of hydrobromic ether and placed it over the patient's mouth and nose. After one long, deep inspiration, his face became deeply flushed, and he soon began to talk and then to shout. More of the liquid was poured on the sponge; but his movements interfered with the inhalation of it with promptness; muscular rigidity then came on, and was marked; respiration was very nearly, if not quite, stopped for a time by tetanic spasm of the chest. These symptoms were almost as bad as are ever seen from ether, chloroform, or the mixed vapors. The Dr. had seen worse muscular action and rigidity, but this was as bad as generally met with. During this time the ether was rapidly added until the supply was exhausted (13 drachms,) and sufficient relaxation was not produced to make the operation feasible. No observations could be made, of course, of the patient's pulse. He recovered consciousness quite rapidly, as compared with other anæsthetics, and suffered no unpleasant after-effects.

This was not, of course, a fair trial of the remedy. The mode of administration was decidedly faulty. It is an ether, and must be given as an ether; and that this is imperative is the lesson to be learned by this failure.

My personal experience with hydrobromic ether fully sustains the observations of others as to its exceeding promptness of action, and the rapidity with which recovery from its effects takes place. It is also more pleasant to inhale than chloroform, which is not very unpleasant, and infinitely pleasanter than ether.

In my own experiments on animals I found that frogs, placed in a watery solution of ethylic bromide, become as completely anæsthetized as if they were immersed in an aqueous solution of chloroform.* Berger states to the Société de Chirurgie (*Le Progrès Médical*,) that he had been impressed by the rapidity with which these animals succumbed to its vapor. Terrillon administered the vapor of ethylic bromide to eighteen dogs without accident to any one of them.

Dr. Ott, of Easton, Pa., who has made thorough and scientific researches with the bromide of ethyl, experimenting upon frogs and rabbits, believes that the increased frequency of the pulse is due to stimulation of the accelerative nerves, or of the cardio-motor ganglia, and the dangers in administering the drug are less than those of nitrous oxide.

W. H. Hingston, Montreal, Canada, has used no other anæsthetic since commencing the use of bromide of ethyl. There is less resistance and struggling on the part of the patient. Vomiting is less frequent. It is eliminated from body more rapidly than any anæsthetic except laughing gas.

* Op. cit. "Artificial Anæsthesia." Turnbull.

“Bromide of ethyl is one of the, and in some respects the, most valuable anæsthetic hitherto used.”

In Terrillon's experiments, muscular relaxation occurred in human beings in two or three minutes; at times there was congestion of face, neck and upper part of the chest. The pupils did not contract, but were dilated. The pulse was always quickened, and every fresh dose caused fresh acceleration. Respiration was always hastened, and a hyper-secretion from the buccal and pharyngeal glands took place. Sensibility and consciousness returned with great rapidity; vomiting was not uncommon both during insensibility and sometimes for hours after. Verneuil, at the same meeting of the Société de Chirurgie, stated that one patient, a woman, to whom he had given the vapor of ethylic bromide, was asleep in an instant; and Terrillon stated that anæsthesia may be produced in less than a minute. In our own experiments the shortest time necessary for primary anæsthesia was thirty seconds.

Dr. H. C. Wood found, by experiments upon animals, that if the vapor of ethylic bromide be given with moderation, anæsthesia may be produced without notable reduction of blood-pressure. He further observes (*The Th. Gazette*, June 15, 1885,): “After mixing with olive oil and agitating and distilling the liquid with this precaution we can obtain a safe and powerful anæsthetic, well adapted to cases of minor surgery which do not warrant the exhibition of ether and chloroform, and particularly eligible in obstetrical practice. In the experiments of Dr. C. C. F. Gay,* of Buffalo, the agent employed was evidently, from color and taste, impure, as was also that used by Dr. D. C. Wilkinson,† of Galveston, Texas. In Dr. I. C. Moore's cases the ethyl was abandoned for ordinary ether, even when the insensibility had not passed off, owing to the exhibition of so-called bad symptoms, great excitement, with intense and persistent retching and vomiting, with venous engorgements. The article was stated to be pure, and was from Wyeth & Brother. The bromide of ethyl is costly, from the great care required in its preparation; and the great demand for it has caused many imitations to be placed on the market. The importance of its purity was at first so little understood that the original manufacturers did not take sufficient time to purify it, so that for a time the article contained carbon bromide (C_2B_4), and free bromine, phosphorus, and bromoform.‡ These were found in the specimen employed by Dr. Sims, which was a brown acrid liquid, with a pungent and disagreeable odor. Twenty drops of this given to a rabbit which had previously taken two grammes (thirty grains) of pure ethylic bromide without the slightest ill effect, pro-

**Medical Record*, July 17, 1880.

†*Medical Record*, May 15, 1880.

‡ This can be prevented by mixing bromide of ethyl with five per cent. of olive oil, agitating and distilling the liquid successively.

duced irritation of the gastro-intestinal tract, followed by death in eighteen hours.*

That ethylic bromide may be employed with ease and success, has been abundantly proved by the experience of many observers. M. Bourneville has administered it to a large number of patients in the Salpêtrière Hospital, for the arrest of paroxysmal hysteria and of epilepsy. He has also administered it daily by inhalation for fifteen or twenty minutes, with the fortunate result of considerably diminishing the frequency of the convulsive paroxysms. In several of these cases the temperature was depressed about half a degree centigrade during the act of inhalation. Immediately after the withdrawal of the anæsthetic the normal degree was recovered, and sometimes even surpassed. The pulse in about five hundred administrations was somewhat accelerated during the period of inhalation. In six instances only was retardation observed. Respiration in like manner was almost always accelerated. A copious overflow of tears was nearly always remarked. The urine never contained either albumen or sugar, and the quantity of the liquid was not affected. Rigidity of the limbs and tremor involving the upper extremities, were sometimes noted. Daily inhalations for a period of two months exercised no unfavorable influence over the general process of nutrition; five patients found their weight increased during this period.

There are certain preparatory precautions which are necessary to the safe inhalation of the bromide of ethyl:

1. All tight-fitting garments in and about the neck and chest should be loosened.

2. The saturated ethyl vapor must be inhaled almost to the exclusion of atmospheric air. The best form of inhaler is a thick towel folded in the form of a cone, closed at the apex with a large pin; between the folds of the towel place a sheet of newspaper. The base of the cone must be wide enough to include both mouth and nose.

3. Instruct the patient, in advance, to make deep and long inspirations. In the cone place about one drachm, by measure, and at once cover the nose and mouth with it, and do not remove the cone until anæsthesia is produced, which will be in from twenty to thirty seconds.

The anæsthetic sleep will not last more than from two to three minutes. The patient retains the usual healthy color of lips and skin, and the pulse first becomes rapid, then slower and stronger as the narcosis becomes profound. The patient, as a rule, awakens suddenly and completely; but if there is nausea or much agitation, it is best for him to remain quiet and in a horizontal posture for some time.

* Dr. S. Wolff, *Am. Journal of Pharmacy*, May, 1880. The writer also obtained a portion of the same liquid from Dr. Wolff, and on comparing it with the specimen from Dr. Sims found it to be the same.

Perhaps no operations are more painful than those on the eyes, eyelids, or eyeball, to a sensitive person, and there is no anæsthetic that I have found so applicable as bromide of ethyl in such operations. I recently administered it for the removal of a deep-seated tumor of the eyelid; the operation being performed by Dr. Hermann Knapp, of New York. The patient took the towel, with about two drachms of the ether, in her hands and applied it to her face, and in thirty seconds she was so completely anæsthetized that she was not conscious of one particle of pain until the tumor was entirely removed; she had no nausea whatever, or any other disagreeable symptom.

Again, in operations on diseased mastoid cells, I have employed it in some twenty cases with entire success, and in a very recent case in which the whole bone was diseased and much of it had to be removed, the operation was of a most painful nature. I administered the bromide of ethyl to this patient, who was very much exhausted by profuse discharge from a large cancerous growth. The patient went under the influence of this anæsthetic with the most delightful effect, not suffering at all from the operation, and going to sleep after it without a bad symptom.

We have, in times past, heard a great deal of the injurious effects of bromides; and for a time, therefore, we gave the hydrobromic acid and ether with great caution, never exceeding thirty drops three times a day. But not so now; experience has taught us that we can use it, if well diluted, up to sixty drops three times a day without any injurious results. To obtain its full physiological effects in epilepsy, certain cases of pulsating tinnitus aurium, and in preventing the disagreeable cephalic symptoms occasioned by quinine and iron in these various nervous affections, we have found it at times very satisfactory. The salts of this agent, bromine, can be, and are, used with the greatest freedom in the form of bromide of potassium, sodium, and lithium, in doses of grs. xl- $\overline{\text{zvi}}$, given in six days without the least fear of its injurious effects upon the most delicate stomach; and relieving, as by a charm, convulsions, epilepsy, whooping cough, sleeplessness, headache, cerebral disturbance, tetanus, and all forms of mental derangement.

As is well observed by Dr. Chisholm: * “For office use I find the bromide of ethyl invaluable on account of its promptness, efficiency, the evanescent nature of the anæsthesia, the absence of nausea, and the perfect comfort with which patients operated upon can leave my office within a few minutes after the etherization.”

Bromide of ethyl should never take the place of chloroform or sulphuric ether where any tedious operations are to be performed; but there is no reason why this useful anæsthetic should not be employed in all operations in minor surgery and in those on the eye, ear, throat and

**Maryland Medical Journal*, January, 1883.

nose: having everything ready in advance, so that the patient shall be as short a time as possible exposed to the evil effect of an anæsthetic.

I conclude this brief paper by a statement of the conclusions arrived at in 1879. My favorable opinion remains unchanged at the present time, after using the article from 1878 to 1886 in all my office operations.

	Minutes.	Seconds.
Shortest time taken to place a patient under the primary anæsthetic influence,	0	30
Longest time,	5	00
Average time,	1	30

I did not then advise that bromide of ethyl should be resorted to in protracted operations, and I never have employed it in any case longer than forty minutes, and have never used more than four ounces of the pure ether in one case.

1502 Walnut St., PHILADELPHIA, March 12, 1886.

PRINCIPLES AND METHODS OF FILLING TEETH WITH GOLD.

BY A. G. BENNETT, D.D.S., PHILADELPHIA, PA.

To the question, "What is the most urgent need of dentistry to-day?" several answers may be given. Perhaps few will dispute the assertion that our great need is scientific knowledge—exact and exhaustive—of the structures and materials, the pathology and therapeutics, involved in saving teeth. No one doubts that "the need of the profession of the age is to know;" but that "our mechanical ability has outrun our scientific attainments," may be considered a debatable question. To what extent have we been able to utilize our knowledge of dental anatomy and physiology in saving teeth? It is true that our most successful operators have usually been, and are, the best educated; yet skill, after all, is the one thing needful to give any meaning or value to knowledge in practical dentistry. Dr. Thompson claims that "it is most imperative and important that we better understand *why* we perform our operations; the *how* will follow of itself. Filling a hole in a tooth is an absurdly simple thing to do—a mere mechanical and artistic performance." The *why* we fill a tooth has never been considered much of a mystery. The tooth cannot resist decay nor restore the lost portion—in short, it cannot fill itself. Again, what is the value of "scientific reasoning," as opposed to experimentation? Is it not a fact that all theories and sup-

posed principles are established or destroyed by experimentation and experience? Again, Dr. T. claims that we are not scientific, because the lost parts are not restored in natural substance. There may be such a thing as "striving after the unattainable."

As long as the operation of filling a tooth is slightly surgical and largely mechanical, so long there will exist a greater necessity for developing skill than for acquiring knowledge. How many educated dentists are guided in operating by the structure and functions of the dental tissues? The enamel-rods, the living fibers, the nutritive currents, receive little or no attention, or must yield to mechanical requirements.

When all is summed up, it must be admitted that, though one *should* have the learning, he *must* have the skill. It has been not unfrequently more than hinted that some operators who can talk fluently and write elegantly on saving teeth are unable to make even a presentable filling.

Filling a hole in a tooth may be an absurdly simple thing as regards mechanical principles, especially if the tooth is to be thrown into the operator's drawer; and simple enough, even when the tooth is exposed to the forces and fluids in the mouth, if the object be merely to insert the filling so that it will be retained till it decays out; but to insert a gold filling in such a manner that the tooth will resist, for say ten years, all chemical, thermal, and perhaps electrical, forces to which it may be exposed, is quite a different thing.

Our text-books on operative dentistry, though treating the subject of filling in detail, give space and importance to certain features of the subject out of proportion to their relative value. For instance, Taft dwells at great length on the preparation of cavities by classes and their modifications, and on the various forms of gold; yet gives comparatively little exact information and few definite directions on the most essential of all points—the adapting or packing of the gold against the walls and around the margins of the cavity. No one doubts or denies the fact that proper preparation of the cavity is the basis of a perfect filling; but, after all, the adaptation of the gold to the dentine and enamel surfaces is the essential requirement. This is trite enough to those who use gold successfully, but it has not received the general recognition which its importance demands. Adaptation is the vital point, for the obvious reason that defects, even the smallest in the cavity, can readily be seen, with or without a magnifier, and removed, while defects in packing the gold are more or less concealed from view, and generally cannot be corrected except by taking out all or a part of the filling.

Some one remarks that it is difficult, if not impossible, to adapt two hard substances such as dentine and extra-cohesive gold to each other so as to form a moisture-proof joint; hence the necessity of having as much softness in the gold as is consistent with the required cohesion; and

hence the necessity of an even, smooth wall; for, since adaptation to such a wall is difficult, it is obvious that it is well-nigh impossible to adapt gold against rough, uneven surfaces. It is clearly impossible to force gold into the minute inequalities of dentine and enamel. In short, as some one has said, a filling should resemble a cork in a bottle rather than a ground-glass stopper.

Though the essentials of successful tooth-filling are more or less familiar to all, yet, as a basis for what is to follow, they will bear repetition. "It has been said," remarks Dr. Atkinson, "that almost anybody can make a filling moisture-tight. Almost nobody does. If the cavity is properly prepared, you will have no difficulty." The expert few may have no difficulty, but the unskilled many, even with a perfectly prepared cavity, will often fail of success.

To prevent breakage and leakage, and because a tooth is partly an animal tissue, and not wholly a mineral substance, the following are the essentials for cavity preparation:

1. A cavity should be so prepared and its border so beveled that when filled the tooth will offer the greatest resistance to mechanical and chemical forces.

2. Complex cavities should be so simplified and their parts made so accessible that the filling material can be readily and certainly adapted to their walls.

3. Approximate cavities, which extend to the excising edges or occluding surfaces of the teeth, should be so prepared and filled that the strength of the operation will be equally divided between the tooth and the filling.

4. The walls of a cavity should have no corners or acute angles, and should, when possible, form the segment of a circle; and the bevel of the enamel should, as far as may be, conform to the line of its cleavage.

5. Smooth, strong walls, secure anchorage, and perfect adaptation of the filling material to the tooth-bone, are the essentials of durability.

6. As regards the enamel, it is better to remove too much than too little; as respects the dentine, better to remove too little than too much; and as to the anchorage, it had better be too deep than too shallow.

7. Anchorage should be secured by so combining pits and grooves as to do the least injury to the dentine and give the greatest strength to the filling; and the enamel should, when possible, be supported by living dentine.

And, to sum up, smoothness of surface and softness of material insure closeness of adaptation.

A few words on the final preparation of approximal cavities may not be amiss. Dr. Jack's idea that a groove-cutter should have a rounded edge, is certainly a good one. A concave floor to the groove gives

greatest strength, besides being exactly adapted to a convex surface on the plugger. After grooving, take a sharp spoon excavator of the proper size, and remove the fine edge from the margin of the groove. With a chisel excavator cut and scrape the cervical wall till all softness of the dentine and roughness and whitish appearance of the enamel have been removed ; then polish all accessible surfaces.

Much as opinions and theories may differ in regard to the various forms and methods of using gold, all successful operators are agreed that softness of the metal is the essential property for tooth-preservation. The value of the cohesive property, essential as it is for contour work and in restoring crowns, has been over-estimated, and to many it has proved a delusion and a snare, because of easy welding and difficult adaptation. Who has not observed and admired the beautiful working of this gold ? Yet how few have noted the fact that its adaptation could scarcely be worse. To many for years the cohesive property contained the "promise and the potency" of all that is "ideal" in the perfect filling material. For those who claimed that if a tooth was worth filling at all it could be filled with gold, and then proceeded to fill all cavities without regard to the quality of the tooth-bone with cohesive gold, there could be nothing but ignoble failure. Some few expert manipulators of cohesive gold have attained phenomenal success ; but of some of these one can truly say "they did not live to see their wrecks," their careers being cut short by too intense devotion to their golden idol.

If there was nothing more difficult in operative dentistry than the welding of cohesive foil, even when one end of the mass is anchored in a carious cavity, the record of failures would form a small part of dental literature. Those who have regarded the cohesive property as something of a marvelous mystery, seem to have lost sight of the two facts that cohesion is an inherent property of all metals, and that gold when pure and clean welds cold simply because it does not oxidize. Had the value of softness in cohesive gold been noted and understood sooner, there would be less reason to be lost in wonder that teeth decay so readily and so rapidly around gold which worked so beautifully. True, cohesive gold is relatively soft and ductile, and when used in the form of ribbons, even though made from heavy foil, some operators have no doubt been able to "swage" and "strap" and "band" it beneath and over and around the frail enamel walls of even delicate laterals ; but the inherent ability and acquired skill to do these things have been given to the favored few.

The best gold is not always "that which can be worked the most easily, rapidly and perfectly," but that which can most safely and certainly be adapted to dentine and enamel walls. Extra-cohesive gold may not work the most easily, but it certainly works the most rapidly, as large pieces and many thicknesses can be used under a broad plugger ; and it

works perfectly, since it makes a mass which is securely welded ; yet the adaptation may be most defective.

Not many will dispute the assertion that few gold fillings are absolutely perfect. Most of them have two kinds of defects—visible and invisible ; the former of course being around its margins in the enamel or gold, and the latter at any point over the entire surface of the cavity. As the condition of the cavity can be readily seen and the kind and form of gold selected, the causes of these defects can be narrowed down to the instrument and its proper or improper management.

1. It may be laid down as an axiom that pluggers should be so constructed and gold used in such a manner as to exclude, with the minimum of time and attention, all defects which from their nature cannot be detected by the eye.

2. Not only the shape of the tooth, but mechanical requirements, as well as esthetic considerations, demand that the walls of a cavity should generally form the segment of a circle. And if their form be not a matter of mere fancy, the size and shape of end and curve of shank in filling instruments must be determined by and adapted to the size and shape and position of the cavity.

3. Owing to the position and condition of cavities and teeth, gold is adapted to dentine and enamel surfaces *directly or indirectly*. When the walls are strong enough it should be adapted directly, and when the walls are weak or the tooth frail it must be adapted indirectly—or, in other words, spread or wedged against the walls. This determines that there are essentially two kinds of pluggers—one for direct, the other for indirect, adaptation.

4. The cavity walls, especially the cervical, being concave, requires that the face of a “direct” plugger should be convex, to secure perfect adaptation ; and this form of face, besides, will insure thorough condensation and welding more certainly than a flat surface, because of the difficulty of holding two flat surfaces squarely against each other.

5. Experiments prove that gold will spread only under a convex surface, either smooth or serrated transversely, the instrument when serrated being so held that the cuts or valleys are at right angles to the cavity wall. Pits and grooves, as well as small cavities and fissures, admit only of indirect adaptation ; hence “indirect” pluggers for these should always have a convex face, serrated in one direction only, so as to spread the gold slightly but firmly against the walls. “Direct” pluggers, when used within the cavity, may be serrated one or both ways ; but when used beyond the walls they should be serrated in both directions, for the reason that here spreading of gold would be a detriment rather than an advantage.

6. “Direct” pluggers are generally of the foot shape, and consist of

two kinds—one short and relatively thick, and the other long and thin ; the short being used within the cavity and beyond its walls, as in restorations, and the long being intended to complete the filling where space is limited, as between the front teeth. The end of an “indirect” plugger is usually small, and may be round, oval or flat.

7. In regard to serrations, it may be observed that they answer two objects, viz. : prevent slipping, and leave a rough surface. Smooth points, though they spread the gold, have been tried and found wanting, because by slipping slightly they burnish the gold, thereby damaging, if not destroying, the cohesive property.

8. Smooth convex points, besides spreading the gold, prevent pitting and porosity. Small points serrated both ways effectually prevent spreading, besides tearing and cutting up the gold ; but convex surfaces cut one way combine the good qualities of both kinds without the defects of either. When soft gold is packed like tin, of course the serrations must be deep, and the plugger should be cut both ways, so as to secure sharp points to interlace the metal ; but when the cohesive property is utilized, no one will now claim that the serrations are intended to cut through and interlock the gold.

9. The pitting or porosity caused by serrations is reduced to the minimum by having the pluggers cut fine. As pluggers of the foot shape are seldom available for indirect adaptation, and because of their relatively large surface do not cut up the gold, they should always be serrated in both directions ; but no good reason can be given why a small “indirect” plugger should be cut both ways.

The writer has devised a set of pluggers based on the foregoing principles and theories, which he has endeavored to verify. These points are the result of a number of experiments undertaken with the view of determining the best form of face and kind of serrations for making a moisture-proof joint with the least risk of injury to the tooth-bone. These points are so shaped and serrated that some, if not all, of the common and usually invisible defects can be excluded with a good degree of ease and certainty, and that, too, without unduly taxing the time and attention of the operator.

This set of pluggers consists of modified and original forms. There are five ordinary round and one flat point, and six foot-pluggers, three short and three long ; and it is believed that these, in connection with the most useful hand-pressure points, will enable the operator to reach every cavity that can be entirely or partly filled by mallet force. This set of instruments was illustrated in the *Dental Cosmos* for October, 1885.

A few words on the automatic mallet, for which these points are intended, may not be amiss. The blow of the Snow & Lewis automatic mallet, which is justly regarded as the best, is a little too sharp and

painful for the safety of the enamel and comfort of the patient. These defects are easily removed. It has been the habit of the writer for some years to put a drop or two of castor-oil on the end of the mallet, which is done by taking it out of the case. The blow is modified partly by some of the oil remaining on the upper end of the plugger-socket, and partly by some of it gradually working in around between the mallet and the case, thereby retarding the descent of the former and increasing its effectiveness; for the blow seems to combine all the good qualities of steel and lead without their objectionable features. Besides this, the working parts of the mallet should be occasionally lubricated with engine-oil. Owing to the strength and temper of the spring, all mallets cannot be equally modified by the method just described. To save time and avoid changing points, the operator should have two or three automatic mallets, or it should be used in combination with the hand-mallet.

In concluding, the writer would say that, though these points may not be perfect as made, it is believed that it can be demonstrated that they embody the correct principles.—*Dental Cosmos*.

A CASE OF A BROKEN PORTION OF A TOOTH FORCEPS IMPACTED IN THE AIR PASSAGES AND SUCCESSFULLY REMOVED BY TRACHEOTOMY.

BY SIR WILLIAM MAC CORMACK, F. R. C. S.

Read before the Odontological Society of Great Britain.

The patient was a young woman, aged twenty-four, a domestic servant, who applied to Mr. J. H. Sanders, of Barnstaple, for the purpose of being fitted with a denture. On examining her mouth Mr. Sanders found a number of unhealthy stumps in the upper jaw, and advised their removal. To this the patient consented, but begged to be allowed to take chloroform. The anæsthetic was accordingly administered by Mr. Jackson, a surgeon of Barnstaple, and Mr. Sanders extracted several molar roots on the right side. He then took up a pair of bicuspid forceps and tried to extract the right upper second bicuspid, but met with an unusual amount of resistance and the forceps slipped. He reapplied them and was about to make another attempt, using a little more force, when the palatine blade of the forceps suddenly broke off close to the joint and disappeared. The patient at once showed signs of impending suffocation, with extreme dyspnoea and lividity, and appeared for a time as if moribund. Artificial respiration was at once resorted to, the patient was inverted, and every

effort made to relieve her of the fragment which had evidently passed into the air passages; but though the dyspnœa passed off after a time, all efforts to obtain the expulsion of the foreign body proved fruitless.

During the next five or six weeks the patient remained without any very urgent symptoms, though she suffered from pain to the right of the sternum, opposite the second and third intercostal spaces, together with constant spasmodic cough and bloody sputa, and she began to lose strength. At last, seven weeks after the accident, she was sent up to London and admitted into St. Thomas' Hospital. On stethoscopic examination râles were to be heard all over the right lung, and a peculiar rasping sound at a point to the right of the sternum where the patient complained of pain. She had constant cough and dyspnœa, was unable to sleep at night, and was evidently getting rapidly worse. There could be no doubt that the foreign body was impacted in the right bronchus, and that there was little or no chance of its being expelled by coughing. It was therefore determined to attempt its removal by tracheotomy.

Accordingly, on November 26, being the third day after her admission, chloroform having been administered by Mr. Tyrrell, Sir William MacCormack made an incision down the middle line of the neck from just below the cricoid cartilage to the sternal notch. Ligatures were placed round the isthmus of the thyroid body, which was divided between them, and an opening nearly two inches long made in the trachea. This was kept patent by means of silk threads, and forceps passed down. The left bronchus was found to be clear, but in the right a hard obstruction was met with at a distance of about five inches from the opening, and rather more than an inch beyond the bifurcation of the trachea. On passing down a bullet probe the characteristic ring of steel could be distinctly felt. Attempts were now made to remove the foreign body with the forceps, but for some time without success, owing to its smooth surface and wedge-like shape as well as its firm impaction. Other forceps were tried and then a wire loop, but still unsuccessfully. At last some silk having been wound round the blades of the forceps, a better grasp was obtained, and the fragment, which was fully an inch in length, was seized and withdrawn.

Slight hæmorrhage followed, but Sir William MacCormack decided to close the opening. The patient was at once relieved, and although some slight local broncho-pneumonia followed, it soon passed off, and ten days after the operation the temperature was normal and the patient made an excellent recovery.

Sir William MacCormack added that most certainly no blame could be imputed to Mr. Sanders; the forceps bore the well known name of "Evrard," and there were no external indications of any flaw.—*British Journal of Dental Science.*

WAIL OF THE SECOND BICUSPID.

BY DR. CHARLES JENKINS, DRESDEN.

Read at the Thirteenth Annual Meeting of the American Dental Society of Europe,
held in Berlin, August, 1885.

My acquaintance with your profession began with the attempt of Dr. Tendergreen to regulate my neighbors. This he did at my expense, in the following manner: He set a jack-screw between the right superior cuspid and myself, intending to push the former out. Naturally I was no match for my long-rooted, stubborn antagonist, especially as I was not backed up by the first molar, which had been nearly bored to death, poisoned entirely, pounded to pieces, drawn and quartered by this same practitioner. I was, therefore, pushed out against the cheek about half the distance of my longer diameter. Here was food for reflection, but Dr. Tendergreen was not hungry; he never thought. On graduation at the Dental College he believed that his student-life was already over, instead of just begun. "If I have only sufficient confidence in myself," he said, "I shall succeed." Truth was, self-confidence was the only qualification of which he had a complete outfit.

Without further consideration, he now placed a ligature from the right lateral incisor, which pulled me as far inside the arch as I had previously been outside of it. There he kept me for three months in a position affording space for food, which neither the brush nor the tongue could fully remove. Result, a cavity on my approximal surface. This was filled the next year by Dr. Hammer-Tongs. This gentleman's perfectly sound theory was this: Cohesive gold can be made hard enough to resist successfully all the forces of mastication. Having tested this theory by biting on one of Dr. Hammer-Tongs' fillings, which fell out of my second molar neighbor, I am inclined to regard it as a well-established fact.

But the Doctor's undaunted skill did not prevent a minute cracking of the edge of the enamel at the neck, leaving an invisible interstice above the gold, so that the fluids of the mouth found an open road beneath the filling, whence they burrowed into my vitals, softening the bone down to the pulp chamber. Then came—*Toothache*.

The next day my lady went meekly to Dr. Putty and begged him to relieve her. He had been recommended to her as a gentle operator, who practiced "dentistry without pain." Nor was his reputation entirely undeserved, nor fairly describable by the ill-natured gloss of his rivals, who said that dentistry without pain was a paradoxical phrase. Dr. P. removed the plug, applied oil of cloves, and waited a day or two for the inflammation to subside; then he repeated the operation, this time slightly exposing the pulp. At a third sitting he covered the tender spot

with carbolized cork dipped in oxide of zinc, flowed oxy-chloride of zinc upon this cap, and after it had hardened he filled the remainder of the cavity with amalgam. There was slight discomfort, scarcely to be called pain, and a feeling of insecurity for several weeks, during which the pulp being scientifically smothered, died the calm and peaceful death of the righteous; in fact, it died unnoticed.

However, her ladyship soon began to be troubled with neuralgic pains, distributed well nigh impartially over the whole right side of the face. These were imputed by her physicians to several extraordinary causes, till at last one pill-prescriber, less ignorant than the others, passing his finger along the upper row of teeth and discovering a tender spot, advised her to consult Dr. Fumble. The latter diagnosed incipient periostitis, and proceeded at once to open up the right superior second bicuspid. The pulp chamber was found full of septic matter. In one of the canals there was still a live pulp. This Dr. Fumble thought he could save by the capping process, which, so far from insuring immunity from pain, proved a source of the greatest irritation and distress. He waited till the inflammation reached its height, when he applied arsenic, of which it required three doses to bring matters to a crisis. To further illustrate the beauties of capping, he capped the climax by pushing a broach up this pulp canal and breaking it off, firmly wedged, with the dead matter securely stopped in above it.

I do not need to explain to you what followed this treatment, but one fine morning my lady rose with a face as round as the sun's and a fit model for the brush of a Dutch painter. She now took especial pains to consult the highest attainable authority, and went to Dr. Cleverfingers, whose skill in manipulation had won him a wide reputation. His firmness and delicacy of touch were in marvelous contrast to all my former experience. He took out the filthy cotton, and with a variety of devices, broaches wrapped in cotton, wisps of bibulous paper, applications of absolute alcohol, etc., made an almost perfect cleansing and disinfection of the canal. The Doctor's patience and thoroughness were only equaled by the patience of the sitter, whose confidence was greatly strengthened by his kind yet firm manner. However, the obstruction in the canal caused him much perplexity. As the canal was thin and wide, he managed to find a passage for a very fine broach by the side of the rusty old intruder inserted by Dr. Fumble. He carried the merest thread of cotton wet in carbolic acid up to the foramen, but the cotton slipped down part way during its progress, and the point of the fine instrument passed through the foramen and remained, as in the case of Dr. Fumble. Seeing that the broach when withdrawn was entirely covered by the fibers, he smiled in triumph. Never a case yet in which, by patient perseverance, he could not reach the foramen. He introduced a paste of

idoform into both canals, and when all signs of irritation had passed and he judged the disinfection to be complete, he proceeded to fill the canals with oxy-chloride of zinc. I am bound to say that the Doctor showed extraordinary skill in this manipulation, and I am also bound to say that he overestimated his success.

He filled the main cavity with gold the next day, and my lady was dismissed with the assurance that all was now done that science could do. That night she slept the sleep of the innocent, but next morning she felt a slight tenderness in the region where so much skill had been bestowed, and so many blows had been administered. Delaying, however, to consult the doctor, in the hope for a recovery without help, she was called suddenly to make a journey, and having caught cold, the irritation grew steadily worse, so that she was obliged to consult Dr. Dareall, who was in the habit of using heroic remedies, from which marvelous cures were reported. Dr. Dareall attempted to bore out the cement in the nerve canals, and succeeded in forcing his drill to the point of the root—almost—when it pierced the pericementum just below the foramen. The result was not so immediately disastrous as there was reason to expect, and yet this was the last straw that broke my lady's patience. She knew "something had happened," she said, and she would let the tooth decay in her head, or be drawn, if it gave pain, rather than consult the profession again. The doctor managed to quiet the pain in the abscessed region, and a fistulous opening having been finally established through the alveolus, he was able to pump through a solution of carbolic acid and glycerine, whereupon he declared the abscess cured. From that day to this the cured abscess has behaved like a small Vesuvius, remaining quiet sometimes for months together, and then most unaccountably resuming activity for a few days or weeks, and then subsiding again for another period of deceitful rest.

But why should I, an old and decayed root, half covered with gum and filled with foul debris, recite any further the wrongs inflicted upon me by your profession? Would it be any use to relate the particulars? Are you not notoriously insensible to the woes you systematically inflict? Just look at the items and sum total and see what constant irritation of the pocket nerve has resulted in my case. Here are the charges:

Dr. H.-T., one double gold filling,	30 marks.
Dr. Putty, capping nerve and filling,	30 "
Dr. Fumble, treatment and refilling,	60 "
Dr. Cleverfingers, treatment and refilling,	75 "
Dr. Dareall, for curing abscess,	60 "
Dr. Pivot, for false crown,	75 "
Dr. Bang, binding together the split root and repivoting,	120 "

Total for keeping one tooth in perpetual misery and securing its utter loss in seven years, 450 M., or \$110. I think from observation, that, as bicuspid go, I am only an average case. There is a kind of comfort in that.—*Independent Practitioner.*

ANÆSTHESIA AND DENTISTS.

BY DR. TH. DAVID, DIRECTOR OF THE ECOLE DENTAIRE OF PARIS.

In a previous article* I exposed my views on this subject and came to the following conclusions:

I. Anæsthesia is to be looked upon as one of the major surgical operations which, by the terms of the Law of Ventôre, are only to be performed by Doctors of Medicine.

II. *Officiers de Sante* are only entitled to administer anæsthetics under the guidance and in the presence of a Doctor of Medicine.

III. No one can pretend that an operation which even *Officiers de Sante* are not allowed to perform can be considered to form part of the practice of the dental art, and be permitted to people who possess no medical qualification of any kind.

IV. Dentists who do not hold a diploma and who administer anæsthetics alone, incur the penalties edicted against illegal practice of medicine (Arts. 35 and 36 of the Law of Ventôre au XI.), and in the event of an accident the penalties edicted by Article 319 of the Code Pénal for accidental homicide (*homicide par imprudence*).

The question has just been settled in a court of law. A few extracts of the judgment which now fixes the law on the subject may not be without interest. It agrees in all points with the conclusions we had arrived at, and it even goes so far as to quote our opinion.

TRIBUNAL CORRECTIONAL DE LA SEINE (FE CHAMBRE).

Homicide through carelessness.—Anæsthesia by means of Nitrous Oxide Gas.—Death of Patient.—Sentence.

Considering that it has been shown in the course of the inquiry and trial that on the 25th of November, 1884, M. Lejeune went to Duchesne's for the purpose of having a tooth extracted—that at the patient's request the dentist made him inhale nitrous oxide gas for the purpose of rendering him insensible during the operation; that as a result of these inhalations M. Lejeune had a syncopal attack and died. Considering that for this operation Duchesne made the mistake of not having a Doctor of Medicine to assist him; that for the administration of nitrous oxide gas it is absolutely necessary that the operator should possess a thorough knowledge of physiology so as to be able to examine beforehand, and with great care, the state of the organs of the patient who desires to be anæsthetised; that whatever may be the experience of the accused, an experience which may have sufficed in most of the cases but not in all, Duchesne appears to be lacking in special knowledge, and that he is neither

**Gazette des Hopitaux*, 1885.

a Doctor of Medicine nor an *Officier de Sante*, though he falsely assumes the title of Doctor of Medicine.

Considering that one of the medical experts appointed by the tribunal, Dr. Brouardel, who gave evidence at the trial, considers that for the administration of anæsthetics two competent persons are required, one of whom should be a Doctor of Medicine, and that it is most imprudent to administer an anæsthetic, as did Duchesne, without fulfilling these conditions.

Considering that if, of all surgical operations, the extraction of a tooth may be looked upon as an operation usually of slight importance, and which only requires some dexterity of hand and may be thus performed by any dentist, even one who holds no diploma, the case is not the same when the operation is performed during anæsthesia—that in the latter case, according also to the opinion of the experts, it belongs uncontestedly to the class of major operations that under these circumstances, according to the provisions of Article 29 of the Law of Ventôre au XI., *Officiers de Sante*, and with still more reason dentists who hold no diploma have no right to perform it except under the superintendence and in the presence of a doctor.

Considering, also, that the present director of the *Ecole Dentaire de Paris* does not hesitate to acknowledge that the help of a doctor is absolutely required during the administration of anæsthetics by dentists.

That it thus appears from all that precedes that Duchesne in November, 1884, through his imprudence, negligence or non-observation of the laws, was guilty, unintentionally, of homicide on the person of M. Lejeune, a misdemeanor foreseen and punished by Article 319 of the *Code Pénal*.

As regards the damages claimed by the *partie civile* (relatives).

Considering that the death of M. Lejeune must be looked upon as due not only to Duchesne's fault, but also to the imprudence of the victim himself, who made the mistake of requesting to have an anæsthetic administered to him without having previously consulted his ordinary medical attendant, and without requiring the assistance of any doctor.

For these reasons condemns Duchesne to pay a fine of 600 francs, and also to pay to the widow of Lejeune the sum of 3,000 francs as damages.

NOTE.—In France the medical profession is divided into two classes, the *Docteurs en Médecine* and the *Officiers de Sante*. *Docteurs en Médecine* correspond to our fully qualified general practitioners (not to our M. D's.), and are entitled to practice every branch of the healing art in any portion of the French dominions. The *Officiers de Sante*, on the other hand, form an inferior branch of the profession, and are licensed to practice medicine, midwifery and minor surgery, but only in the department in which they obtained their diploma; they might, in a certain sense, be compared to those who practice on the strength of the L. S. A. alone.—*British Journal of Dental Science*.

WHAT DOES HE MEAN?

In a recent issue of the *Items of Interest*, the editor delivered himself of the following criticism:

“*One of the reasons* Dr. Flagg gives in his Quiz Questions why men have better teeth than women is that they chew tobacco.”

And yet women will not chew! What obstinate creatures they are. Perhaps it is because these men will not tolerate the practice in women. Ah, these men are selfish beings! I always knew they were. They want to monopolize this savory morsel to their own use. Why is it our fair sex do not quietly creep up behind their liege lords, and as they take a bite of their pigtail, whisper, “*Me, too?*” Or, as their superiors sit by their side, and with so much grace and dignity squirt their tobacco-juice into the corner, why do not these sisters, wives and sweethearts snatch a precious quid and “chaw,” too? These women are silly creatures to let their teeth rot, when by reducing to pulp between their teeth a five-cent plug of tobacco per day, it would give them as nice, clean, white teeth as these tobacco-chewers have. They might hide behind the door, or stealthily crawl into the husband’s library while he was gone—or visit Prof. Flagg. Would not these stolen opportunities of delicious chewing be a delightful way of cleaning their teeth? Think of it, you fastidious girls! It would do away with the necessity of using good, sensible, hard food and the tooth brush. Ah, the precious pigtail; how it saves the teeth of a man from decay? And yet he will give none of it to his wife! The ungrateful wretch! So he chews and spits, and spits and chews the precious quid, *to save his teeth?* And yet his anxious spouse remains unfed, though with such pitying sobs she cries “*Me, too?*”

Does he mean by the above to deny that the use of tobacco has any influence in preventing caries of tooth structure? Is it an attempt to cast a slur on the fair name of Prof. Flagg; or does he intend it simply as a mass of ridiculous nonsense?

If the opinion of almost the entire dental profession has any weight with him, or if he has ever taken the trouble to investigate the subject for himself, we feel that our first query must be answered in the negative. We have never heard Dr. Flagg assert that tobacco *per se* was a preservative of tooth structure; but the *use* of it, by increasing the flow of neutral or alkaline saliva, by the removal from cavities of decay and from about the teeth, of fermentable matter, and neutralizing the results of fermentation, thus keeping the teeth *cleaner* from deleterious surroundings, has long been recognized as *one* reason why the teeth of men are less liable to decay than those of women.

Without in any way encouraging or recommending the use of tobacco,

Dr. Flagg has simply stated a *fact* as he finds it, and however objectionable the practice of chewing tobacco may be, or whatever injurious systematic influence it may have, we think there can be no doubt as to the *truth* of this statement.

It *may be* that if men were addicted to chewing shavings instead of tobacco, the effect upon their teeth would be as good, in which case "one of the reasons why men have better teeth than women" would be because they chew shavings.

As to our second query,—when we contemplate this editor's religious and moral professions, when we call to mind some of the very good little sermons which have appeared in the editorial columns of his journal, it seems highly improbable that he should have any intention of pointing the finger of ridicule at any man whose ability and honesty of purpose are so universally recognized as Prof. Flagg's. If, unhappily, we are mistaken, we can only recommend him to read his own editorial, "What Does His Soul Weigh?"

Looking at the matter in this light, we can only conclude that the criticism was written as a piece of ridiculous nonsense, and congratulate the writer upon his success.—*The Dental Practitioner*.

EFFECTS OF AMALGAM FILLINGS UPON THE SYSTEM.

BY E. A. BOGUE, M. D., NEW YORK.

Read before the Dental Society of the State of New York.

The subject given me to speak upon I consider a most unfortunate one—"The Effects of Amalgam Fillings upon the System." There are none, so far as proven. But as at least a few words are expected from me, I take the liberty of bringing before you the results of a few experiments that have been made, and a little of the guess-work that has been published since 1882. I was unable to find any record of experiments made previous to that time upon the subject, although I have looked back for forty years. Since then, Dr. Hitchcock, Dr. Talbot and Dr. S. P. Cutler, formerly of New Orleans, have all made experiments, most of which have been carefully conducted. The conditions which existed in the mouth have been detailed, and I will briefly rehearse a few of the principal experiments and the conclusions drawn from them.

Dr. Talbot's paper is published in the November number of the *Ohio State Journal*. I may, perhaps, be pardoned for rather sharp criticisms,

for the time is short, and I am fully aware that sharp criticisms will be applied to what I say.

Dr. Talbot says in his experience, "A sufficient portion of the material is rubbed in the hand and placed in the tooth." His article is exceedingly loose in that particular. Good amalgam fillings are not made in that way, but the constituent parts are carefully weighed and the proper proportions preserved. Eight experiments were made by Dr. Talbot, by heating amalgam fillings in bottles to about 100 degrees, and a vapor was given off, blackening test paper; yet this same article notices other large amalgam fillings which were kept three months at 100 degrees that showed no change, and in others he notes an increase in weight from oxydation that has taken place.

Dr. Talbot fails to realize the difference between amalgam placed and kept continually in a hot and dry position and amalgams kept most of the time wet by the saliva.

Amalgams well made will not part with their mercury under about 400 degrees.

He speaks of cases of poisoning caused by amalgam fillings, and giving the verdict of a coroner's jury would have you believe that death was caused by the "existence of the amalgam in a second molar tooth on the right side of the lower jaw." The loose talk of an average coroner's jury is given as a scientific fact.

My own experiments in 1883 explain some other facts. A large variety of amalgam fillings were kept by me at 100 degrees for three months, but were kept in saliva, and they seemed to gain in weight. They were all weighed down to one-tenthousandth of a gramme. But in all the varieties tested by me there was no mercury found in the bottle, either by myself or Prof. Chandler, who tested the specimens after me to prevent the possibility of error.

Dr. Pease, of Dayton, has made some experiments, it seems, and as he is an old practitioner and a man of decided good sense, judging from his writings, I have the pleasure of noting what he says in the *Ohio State Journal* for September, 1882.

Dr. Pease says he has never seen any bad effects in any of his patients from amalgam fillings used in connection with gold, and he then calls attention to the blue mass pills so often administered, which take three days to work off. He asks what becomes of the mercury lying in the system during those three days; has it or has it not been absorbed? He assumes that there are cases of administration of mercury from drugs where poisoning would occur more than from fillings in the teeth.

If amalgams are inserted with a large surplus of mercury, the metallic mercury may be found in the mouth after the pressure that is applied to the filling brings the mercury to the surface, and from there is carried to

the stomach as metallic mercury. I have read within the past two months of something like two pounds being put into the stomach of a patient by means of a tube to correct an impaction of foul matter, and in a few days the mercury was discharged and the patient then recovered.

We might argue, I think, that metallic mercury was harmless unless converted into an oxide or chloride.

I once more refer to Dr. Pease, who is exceedingly apt. He says if mercury exudes from a tooth through a defective filling, don't blame the mercury, but the dental colleges who license such men to do dental work. —*Odontographic Journal*.

DIAGNOSIS—ITS IMPORTANCE.

Early in our professional career we often met in council an aged physician who was very highly educated, and whose counsel, as to the treatment of disease, was highly prized, yet it is probable that, in his own practice, he often, if not generally, failed to know what ailed his patients. Perhaps his powers of observation were naturally defective, but let this be as it was, when the pathological condition of your patient was pointed out to him he would give to you good, sensible advice as to treatment. Noticing this physician's misfortune, awakened us to the great importance of correct diagnosis.

Some physicians, or so-called ones, however, succeed in gaining the confidence of communities, and in amassing wealth, without much information in diagnosis or in anything else. One that we knew made reputation by calling every little excrescence a cancer, and burning it out with crude potash prepared by himself, accompanying the process of preparation with some mystic flourishes, such as breathing on the material nine times while his eyes were closed. It was claimed in his behalf that this enabled him to discriminate so as to avoid sound underlying tissue, and thus "eat" only the cancer. A wart, a wen, a whitlow, or whatnot, was a cancer in his vocabulary, and, that his medicine would eat it was holy-writ proof that his diagnosis was correct.

In like manner, we see, almost daily, a quack who calls any cough consumption, increased action of the kidneys, due to cooler weather, is Bright's disease, a common itch is scrofula, and eczema is leprosy; and, as the fool-killer has long been derelict in duty, he prospers financially.

By mistaking or mis-stating the diagnosis, a man often gets credit for marvelous, and almost miraculous cures.

Dentists don't treat such great varieties in disease as do physicians; but they too have their difficulties and make mistakes. The disease known as

pyorrhœa alveolaris illustrates this truth. A patient's mouth may be very offensive, his gums may be red, spongy and swollen, crusts of salivary calculus may abound, and the dentist may call the trouble by the long latin name above, scrape off the tartar, apply a lotion, suggest a tooth-brush, and report the case cured by a single application. Are not such cases common? Does the description refer to a familiar or to an unfamiliar scene? But all named in the case above may be present, and all claimed may occur, and yet no *pyorrhœa alveolaris* has been cured, nor has it been even treated.

A genuine case of the virulent disease may present milder symptoms than are described above; yet the man who professes to cure genuine *pyorrhœa alveolaris* in a day, and by a single application, may be a good manipulative dentist, and an honest, sincere man, but we always take for granted that he has made a mistake in diagnosis. The man who really understands the pathology of this disease will not regard it as purely local, and he will not rely wholly on scraping, or other local measure.

In treating *pyorrhœa* it is quite important to remove all deleterious and unpleasant accumulations from the teeth, and even from the entire mouth. Cleanliness is akin to godliness; and it is as important here as in the treatment of typhoid fever. No sane physician would allow excrementitious matter to remain in the bedroom of the invalid in such case, but he would not claim to have cured the patient by its removal. And were the typhoid patient to regain his health within a day after a single removal, we would all know the physician had erred in diagnosis when he called it typhoid fever.

An eccentric physician claimed that he was making a good average in his practice, as he cured a goodly number who were getting well anyway, and killed some who would have died even without treatment. It may be that some of our specialty have had similar experience, even when endeavoring to do the best for their patients.

But if in writing this we succeed in calling the attention of our readers to the importance of correct diagnosis, thereby inducing some to greater carefulness and closer study, we shall be well repaid for the brief effort. In referring to the cases of extreme disregard in this direction it is not our purpose to intimate that we know of dentists deserving to be classed with such; but in setting forth extremes, we can better show the exceeding blackness that is possible when developed by the united forces of ignorance and dishonesty. — *Ohio State Journal of Dental Science*:

THE City of Paris has lately appointed a lady as medical examiner of girls throughout the local schools. It will be her business to see that the girls are not overworked, and that they get through their studies under sanitary conditions.

FACTS VERSUS FANCIES.

BY E. O. KINSMAN, D. D. S., CAMBRIDGE, MASS.

Read before the N. E. Dental Society at Burlington, Vt., October 1, 1885.

Mr. President and Fellow-Members: In presenting this short paper to you to-day we cannot expect to more than lightly touch upon a few items as they present themselves to us in everyday life. An old saying, "there is nothing new under the sun," is as applicable in dentistry as in all other departments in life. In our chosen field of activity a certain routine of duties presents themselves each day, none of which can be neglected, if we desire to sustain our reputation. Punctuality upon given hours of work, ready for any and all departments of labor. It brings its reward in increased number of patients, who, always finding us true to our word, will trust us to be true to our work, and will tell it to those with whom they mingle, spreading our usefulness to our own credit and their good. Neatness in the arrangement of our office makes a lasting impression upon all who may call. Picture to yourself a disorderly room, furniture covered with dust, floor with dirt, operating chair and cuspidore filthy, instruments rusty, stained, perchance, with blood, everything in confusion, and let me ask how long, as a general rule, will such a man prosper. We have seen all these coupled with the operator in comparatively the same condition. Among the worst features of some dentists is the disgusting habit of tobacco chewing when operating. The above are facts, in many cases painfully apparent to an observer, while they may seem very slight faults to the observed. Faithfulness in all our operations to the remotest degree is the only way to be even partially certain that results will be satisfactory to ourselves and our patients. We cannot trust to luck to save us any loss of confidence with our patients or give us lasting work that we can look back upon with pride for years to come. How many are there who will care to say, as we know of one young dentist saying, who was trying to establish himself, when spoken to about the general appearance of his operating and the few unclean instruments exposed to view, "I don't care anything about that if the fillings will only stay in until I get the money for the work and the patient gets outside the door." Enough for facts thus presented, and now for some, the result of slight observations in reading and practical work. In the line of extracting there are many phases of teaching, more or less practicable. One is "not to extract teeth under any circumstances, for there are none but what can be saved." It may be a fact—we claim it a fancy. What foolishness to allow our patients to suffer untold agonies while we experiment (for it is usually experiment), causing, many times, intense suffering while we are

probing about and applying medicaments only to have the patients return day after day with the question on their lips, "when is this thing going to end?" The results finally, even if temporary relief is obtained, are undermining to the health, bad for the jaws. We have many ideas and ways presented to us about filling teeth, what is best and what is not, so many of them that if any dentist should endeavor to follow half of them he would be decidedly poorer in pocket, but wiser enough to let fancies alone. What a number of appliances, both mechanical and operative, can be found in many an office laid by on the shelf and never used, the money foolishly wasted. It is a mistake to teach the young aspirant to dental honors that he *must* have this or that in order to do anything in his chosen profession. We have in our cabinet instruments that have lain there a decade, never used, purchased under the teaching that no dental office was complete without them. It is right that every dentist should have instruments enough of the required shapes and quality to do his operations successfully, and each dentist must learn from practical experience his needs, and being studious meanwhile, endeavor to improve upon that which he has. It is a duty we owe to our patients that we make as painless as possible all the operations to which we subject them, and so we must be continually experimenting, using the various appliances for obtunding sensitive dentine or relieving the terrible suffering incident to tooth extraction. How often our realizations are fancies, not facts, a continual warfare in which many fall by the wayside faint-hearted. This should never be. If we fail once we should strive harder the next time for success. We must succeed many times, and one victory each time will give us enough joy to offset the sorrow of a dozen failures.—*The Archives of Dentistry.*

MENTAL TRAINING.

It has been said that a man never really knows a thing until he can tell it. The statement would be much more correct if it were that a man never really knows a thing until he can write it, for many a hazy, ill-understood and ill-defined idea daily passes muster in speech, the weakness of which would be detected in a moment if written. Nothing so conduces to accuracy of thought and clearness of expression as the habit of writing.

The effect upon the mind of much writing is seen in the members of the legal profession, a profession noted for the exactness of its mental work. Here the work of the profession is largely done in writing, and to the mental training thus given may be attributed much of the preponderating influence of the gentlemen of the law in public affairs. They simply are the men most trained to accurate thought.

The number of physicians who make a practice of writing upon topics pertaining to their profession is much smaller than it should be.

The ideal state of the profession would be with every physician a writer, at least every one in active practice; for every man who takes the responsibility of human life upon his hands should neglect no means of educating himself for the conscientious and successful practice of his high calling, and the habit of thinking upon paper is possibly of all means the most productive in solid results. This part of the professional work should not be left to the professors in medical colleges, or to men of literary taste. If they only were allowed to treat disease there might be some reason in it, but when all men in the active work of the profession must take daily upon themselves this responsibility, they have no moral right to neglect any means of education.

What shall a physician write about?

His own work. His own locality. These are his fields. He need not wait for some strange, seldom-heard-of case. While such cases do happen, they belong rather to the curiosities of medical and surgical literature than to the practical, every-day work of the physician's life. A plain, carefully studied, carefully reported case of phthisis, or of fracture of one of the large bones, will be of more profit to both writer and reader than an article upon morbus Addisonii or ligature of the common carotid.

A carefully and accurately compiled original report upon the topographical and climatic features of any locality will be of far more value than an ambitious article upon the yellow fever microbe, which, from the pen of an ordinary practitioner, can be only copied from the writings of those who are making this line of investigation a specialty.

How shall he write?

In the plainest and shortest of Anglo-Saxon English. The busy man of any profession wants the facts and the logic, not the embellishment and rhetoric. The day for the stilted Latinized English of Milton and Johnson is gone, never to return to the English-speaking peoples. And so in science. While scientific and technical phraseology has its proper place and is indispensable within that place, many a medical and surgical article is loaded down with an ultra technical jargon which is simply barbarous. Such a style does not necessarily show knowledge. The editorial chair has in mind one such book upon its shelves, a recent work upon nervous diseases, which is such a bewildering medley of defective English, bad Latin, worse French and newly coined so-called scientific terms especially manufactured by the author to help out the combined poverty of these tongues, that to open its pages fairly makes the hair of a modest, quiet linguist stand erect.

Dear friends, beware of the too utterly utter, and read Job xxxvii-2.

When shall he write?

Not simply when the spirit moves him, or some devine afflatus breathes upon him. The spirit is apt to cease moving one to write as cares and practice and money accumulate. It is better to let the sense of duty be the moving spirit. And it is a duty that he should pay back into the common fund of medical knowledge some small portion of the debt for that which he received, and should cease to be only a species of professional sponge, ever absorbing, never producing. And so shall he not only pay his debt, but shall also grow in mental stature and professional power.

And when he has written, What then?

Then *re-write*. Condense. Strike out. Clear up the ambiguities. Erase the long word and use a shorter if it will express the idea. And when he can improve no more pick out the best and send it to a medical journal for publication. And above all let him remember that what is written carelessly and hurriedly is generally of little worth; and also remember that no man can afford, for his own sake, to have published what he has carelessly prepared.—*Southern California Practitioner*.

PROSECUTION OF A DENTIST.

At the Manchester Assizes last month, before Mr. Justice Day, an action was brought against Mr. James Jackson, dentist, Burnley, in which the plaintiff, Mr. Robert Jackson, farmer, sought to recover damages for the alleged seduction of his daughter whilst under the influence of nitrous oxide. There was also a cross action for slander brought against the plaintiff. The trial occupied nearly three days.

His Lordship, in summing up, said the one substantial issue for the jury was, did James Jackson, the dentist, or did he not, administer gas or some narcotic to the young woman, Margaret Ann Jackson, and did he, while she was under the influence of some anæsthetic, criminally assault her? That was the question they had to determine, and it was a question of the very gravest moment. The consequences to the one side or the other must necessarily be of the most serious character. The charge which was made against the dentist was one of assault under circumstances of the most aggravated and nefarious nature. The charge, on the other hand, of which the woman would be guilty, if she had made a false accusation, was one of the most wicked, odious, and vile that could be brought by one human being against another. The case was one of a most extraordinary character, and one which, he was happy to think, was very rarely raised in a court of justice. It was one which demanded at the hands of the jury, as he knew it would most assuredly receive, their deepest and most anxious

attention, so that to the utmost of their ability they might do justice between the parties. He did not hesitate to say that the question was of an extremely difficult character, but it was one which he was confident the jury would, using their own good sense, solve to their thorough satisfaction; and if they did solve it to their satisfaction it should be satisfactory to all well-minded people. He would say nothing about damages, because it was unnecessary. The parties probably were none of them in a position to pay damages. That, however, was utterly unimportant, and should not affect the amount of damages. It was unnecessary for him to say a word about damages, because he should not venture to put any limit upon the damages which they might award to either one side or the other.

The jury retired to consult on the case, and after deliberating for three hours, returned to court and stated that there was no possibility of their coming to an agreement. The Judge thereupon discharged them.—*The Dental Record*.

THE FLUCTUATIONS IN COCAINE.

Notwithstanding the fact that the consumption of cocaine is steadily on the increase, and that remarkable progress has been made in its introduction as a local anæsthetic, prices have declined just as rapidly, and even now there is a perceptible weakness about the market which forebodes lower values. The precipitation of values is owing principally to competition in its manufacture and the decline in the price of leaves. The discovery of cocaine is scarcely two years old and the furore created at the time has spread to the uttermost parts of the earth. It had many enemies, like other new articles, but no remedial agent ever received so much abuse as cocaine, which has fortunately reacted on its defamers to the added popularity of this drug. When first brought on this market it sold for two dollars and a half per drachm, then advanced to ten dollars, and the free advertising it received through the medical press attracted the attention of American chemical manufacturers who were not slow in appreciating its importance in the medical world. One after another started to produce cocaine muriate and the field is now occupied by five manufacturers. The largely increased production tended to cheapen the article, and this had the natural effect of increasing its consumption, although the merits of cocaine are alone sufficient to make its use universal, but more sparingly, if the high figures ruling at the start had continued. The market at present is quoted at eleven to twelve dollars per ounce for bulk. Manufacturers are surprised at the success of their venture. They characterize its sale as being something "wonderful" and the movement has kept up unchecked, with the prospects promising of continuing so.—*Drug Reporter*.

DENTAL SOCIETY MEETINGS.

THE AMERICAN DENTAL ASSOCIATION.

The Union Pacific Railway Company, and connecting lines, will give all members of and delegates to the American Dental Association, and their families, the same very low rates to San Francisco, that are to be given to the Grand Army the coming summer, if the Association will hold its annual session there the last week in July. These rates will be \$50, or less, for the round trip from Missouri River points, such as Omaha, Leavenworth, Kansas City, St. Joseph, etc.; about \$60 from Chicago, Cincinnati, St. Louis, etc., and \$75 or \$80 from Atlantic Coast cities. Tickets will be good from July 1, for thirty days going and eighty-five days returning, and will be accepted by any route returning. Other lines will probably give the same rates for the outward trip.

It is an opportunity to hold our meeting on the Pacific Coast that we will probably never have again. All dentists and their families desiring to attend the meeting of the Association will be given the rates and privileges as members and delegates.

The California Odontological Society has taken decided and favorable action, inviting the Society to hold its next session in San Francisco, and the dentists of the Pacific Coast stand ready to extend every hospitality and to exert themselves to the utmost to make such a meeting a grand success. At the request of a large number of members of the Association I am requested to ascertain the wishes of members of the Association and profession in the matter. All dentists who would like to have the meeting held at San Francisco, as above, will please send their names to

A. M. DUDLEY, SALEM, MASS.

In response to the above, many prominent dentists sent a favorable reply to Dr. Dudley, signifying San Francisco as their choice, but it now looks as if a certain faction of Chicago dentists, who have an eye on the Dental and Oral Section of the coming International Medical Congress, are trying to "bull the market" in favor of that city. Dr. Allport writes: "As between San Francisco and Chicago, I am for the former. As between Chicago and 'Tophet,' I don't care, for, with the row that will be kicked up, the temperature of the two places would be about the same." Dr. Crouse writes: "Remember, I have little personal preference, and that little is against having it in Chicago."

The Union Pacific Railway has just issued a beautifully illustrated book describing the principal points of interest on the route, which will be forwarded to any one making application to W. P. Cooley, 40½ Exchange street, Buffalo, N. Y. To those intending going to California this book will be invaluable.

THE EIGHTH DISTRICT DENTAL SOCIETY.

This Society holds its Eighteenth Annual Meeting at the Genesee, in the City of Buffalo, on Tuesday and Wednesday, April 20th and 21st.

A number of interesting essays are promised, and the session promises to be a profitable one for those attending. All are invited, whether members of the Society or not.

Applications for membership *must* be made to the Chairman of the Board of Censors, Dr. A. P. Southwick, No. 11 Niagara street, or Dr. S. A. Freeman, Recording Secretary, No. 14 Court street, *before* the first day of meeting.

GEORGIA STATE DENTAL SOCIETY.

The Eighteenth Annual Meeting of the Georgia State Dental Society will be held in Macon, commencing on the second Tuesday in May, 1886, at 10 A. M. The "State Board of Dental Examiners" will meet at the same time and place. *Every person* commencing the practice of dentistry in the State of Georgia since the 9th day of October, 1885, *MUST HAVE* a license from the Board of Examiners. This will be, no doubt, the the most brilliant meeting ever held in Georgia.

Very respectfully,

ATLANTA, GA., March 4th, 1886.

L. D. CARPENTER, *Secretary*.

ILLINOIS STATE DENTAL SOCIETY.

The Twenty-second Annual Meeting will be held at Rock Island, Ill., beginning Tuesday, May 11, 1886, and continuing four days.

Dentists in this and adjoining States are cordially invited to attend.

J. W. WASSALL, *Secretary*,
208 Dearborn Ave., Chicago.

A CURIOUS illustration of how much error can be condensed into small space is found in a press dispatch recently published, which announced that a Miss Kolyer had "obtained a verdict for \$50,000 against Thurber, Whyland & Co., of New York, for injury to her health, caused by eating canned tomatoes which were said to have been put up by the defendants, and which the jury found contained muriate of zinc." A correction is now made. The verdict was in favor of, not against Thurber, Whyland & Co.; the tomatoes were not put up by them, but were bought and sold in the ordinary course of business, and were not of their brand; the jury did not find that they contained muriate of zinc, the weight of evidence being directly to the contrary; and the jury were evidently of the opinion that the illness of the plaintiff was not attributable to the cause alleged.

DR. G. C. DABOLL has relinquished his practice in Buffalo, and gone to Paris, where he intends to locate permanently. Dr. Daboll is peculiarly fitted for practicing the dental art in France,—or any other country, for that matter,—having twice had opportunities for doing so while connected with the American Dental Office in Paris, some two or three years since. Besides being an expert and conscientious operator, with an honest love for his profession, Dr. Daboll possesses exactly the physique and qualifications to inspire respect and confidence, not only from the profession, but from those who may desire his services.

MR. JONATHAN HUTCHINSON believes that there is no reason to think that the transmission of syphilis is ever a thing of less or more, but rather that if a child inherits any taint it inherits the whole malady; the varying degrees of severity are to be explained in the same way as we explain the differences observed when scarlet fever is passing through a community. He adduces the hypothesis of M. Parrot that rickets is due to syphilis, and sees no reason why syphilis and rickets should not mix. The question as to whether deep ulcerations of the palate and pharynx, when met with in young persons, are usually due to syphilis or to scrofula, evidence pointed strongly to the conclusion, in Mr. Hutchinson's opinion, that syphilis was chiefly responsible for such ulcerations.

ARRANGEMENTS have been completed for establishing a school in dentistry, in connection with Meharry Medical Department of the Central Tennessee College at Nashville. It will be under the direction of a graduate of the Dental Department of Vanderbilt University, and it will open on the first Monday in October, 1886. The requirements for admission will be the same as for medical students. It will require two years to complete the course, and the tuition will be thirty dollars per session.

Full particulars will be announced in the Medical College catalogue which will be published in the course of a few weeks, and will be sent to any one who desires further information concerning this school.

WE DEVOTE considerable of our space this month to an article by Dr. Laurence Turnbull, of Philadelphia. As Dr. Turnbull is an authority on anæsthetics, the article will be of special interest to those investigating in that line. Although a reprint, the entire article has been revised and corrected, till it now represents the latest conclusions and experiments of the author.

MISCELLANEOUS NOTES.

The Chinese and Japanese Governments are translating and publishing at a cheap rate many of the best English textbooks. Most of Professor Tyndall's works, for instance, have been translated and printed in Chinese, and are issued at a merely nominal cost.

The "Sun" says that a remarkable explosion which occurred in Germany shows the force possessed by dust. A sack of flour, falling down stairs, opened and scattered the contents in a cloud through the lower room, where a burning gas flame set fire to the dust, causing an explosion which lifted a part of the roof off the mill and broke almost all the windows.

A substitute for gum-arabic has been found which may possibly be of use as a mountant. By heating milk with a little tartaric acid, the casein is coagulated. This casein is then treated with a solution containing six parts of borax to one hundred parts of water and warmed. It speedily dissolves and forms a very tenacious, durable and inexpensive adhesive medium.

Doctors Rabourgeon and Freire, of Rio de Janeiro, have recently practiced inoculation of yellow fever on a number of medical students and over two hundred porters and laborers. Soon after the inoculation symptoms of yellow fever in a mild form appeared and passed away again in two days. None of the inoculated fell a prey to the disease, while many of their unprotected comrades were attacked by the disease and died. Many also of the European ship captains and sailors on vessels in port were inoculated and remained free from the disease.—*Medical Record*.

A few years ago a society of eminent Frenchmen discussed the question: "What language would a child naturally speak if never taught?" Twenty different results were predicted.

To test the matter, two infants were procured, and isolated with a deaf and dumb woman, who lived alone in the Alps, surrounded with her sheep and chickens.

After six years the children and the nurse were brought before the savants, who were on tip-toe of expectation as to the results. When, lo! not a word could either of the children utter, but most perfectly could they imitate the crowing of the cock, the cackling of a hen, and the bleating of sheep.

Cement for Cast Iron.—A correspondent of the *English Mechanic* says that he used the following recipe with the greatest success for the cementing of iron railing tops, iron gratings to stoves, etc., and with such effect as to resist the blows of a sledge hammer: Take equal parts of sulphur and white lead, with about a sixth of borax; incorporate the three so as to form one homogeneous mass. When going to apply it, wet it with strong sulphuric acid and place a thin layer of it between the two pieces of iron, which should then be pressed together. In five days it will be perfectly dry, all traces of the cement having vanished, and the iron will have the appearance of having been welded together.

A London paper says that an apothecary of Thorndale had just received a fresh supply of vaccine points, and some of them happened to be exposed to view on his counter. A burly farmer from that neighborhood was in at the time and amused himself by using one of the points as a tooth-pick, pricking his gums in the operation. It "took" in the most approved style, and the man was in possession of a mouth that crowded all the other features of his face out of shape. A case similar to the above is said to have occurred in one of the public schools in Buffalo, through the carelessness of the physician sent to vaccinate the pupils. After using the points they were thrown on the floor, and one of them

was picked up by a youngster and utilized as a toothpick. It was some time before he was able to damn the careless doctor.

Intelligence of the Orang.—We will not say anything about the place the orang has in the long chain of evolution; but while abstract argument leads hither and thither, according as this or that writer is most ably gifted for the same, there is still one argument or influence to which every true naturalist is amenable and which no one will ignore who has studied from nature any group of typical forms. Let such a one (if, indeed, one exists to-day), who is prejudiced against the Darwinian views, go to Borneo. Let him there watch from day to day this strangely human form in all its various phases of existence. Let him see the orang climb, walk, build its nest, eat, drink and fight like a human rough. Let him see the female suckle her young, and carry it astride her hip precisely as do the coolie women of Hindostan. Let him witness their human-like emotions of affection, satisfaction, pain and rage—let him see all this, and then he may feel how much more potent has been this lesson than all he has

read in pages of abstract ratiocination.—*Hornaday's "Two Years in the Jungle."*

Prof. W. H. Flower, Director of the Natural History Museum, London, recently gave a lecture on "Horses of the Past and Present," at the London Institution, in the course of which he said that one of the earliest known ancestors of the horse was the tapir, which was a most interesting animal, and had from the middle of the tertiary period remained unchanged. The especially interesting branch of the family group was that to which the horse belonged, and that family was the one which had undergone the greatest modifications from its ancestors. The points in which the horse had gradually changed was a great increase in size and especially in the length of the neck, and certain alterations in the structure of the bones; but mainly in two points, viz.: the teeth and the feet. Both these changes had been produced by adapting the horse to its altered conditions of life. There was very little doubt, the lecturer thought, but that our domestic horse was derived from the wild horse of Europe and Asia, but it was not possible to say at what time it became domesticated.

BOOKS RECEIVED.

TRANSACTIONS OF THE IOWA STATE DENTAL SOCIETY. Twenty-third annual meeting, held at Des Moines, Iowa, May 5 to 8, 1885.

ADDRESS, delivered before the American Academy of Dental Science, at the Seventeenth Annual Meeting, held in Boston, November 5, 1884, by Edward N. Harris, D. D. S., Boston, Mass.

A PAPER ON COLOR-BLINDNESS, read before the Buffalo Society of Natural Sciences, by B. H. Grove, A. B., M. D., Buffalo, N. Y.

ANNUAL REPORT OF THE EYE AND EAR DEPARTMENT, THE CITY DISPENSARY, BUFFALO, N. Y.

A REVISED AND CORRECTED LIST OF THE DENTISTS OF NEW YORK [STATE], from Beecher's Dental Directory of the United States. New York: Beecher & Co., 42 Third Avenue.

CAULK'S DENTAL ANNUAL, No. IV., 1885 and 1886. Devoted to the collection and dissemination of statistics relating to the business and practice of dentistry. L. D. Caulk, D. D. S., Camden, Delaware. Price, 25 cents.

THE PEOPLE'S HEALTH JOURNAL OF CHICAGO. An independent popular monthly magazine, devoted to Hygiene, Sanitary Science and Preventive Medicine. Chicago: 441 Dearborn Ave. \$1.00 a year, in advance. 10 cents a copy.

THE LIBRARY MAGAZINE. Monthly. New York: John B. Alden, 393 Pearl Street. Price, \$1.50 a year.

TECHNICS. An international review of Medical and Surgical Science. (Official Organ of the American Association of the Red Cross.) Office, 51 Union Park, Boston, Mass., U. S. A. Yearly subscription, \$3.00. Single copies 10 cents. Published weekly.

THE BOOK-WORM. Containing entertaining selections from popular authors. New York: John B. Alden, 393 Pearl Street.

DENTAL PATENTS.

ISSUED FOR THE QUARTER PRECEDING THE DATE OF THIS JOURNAL.

- 331,840—December 8, 1885.—DENTAL SUCTION-PLATE FORMER.—Joseph Spyer, Santa Fé, New Mexico.
- 332,408—December 15, 1885.—APPARATUS FOR VULCANIZING RUBBER.—Herbert C. Miller, St. Louis, Mo.
- 332,626—December 15, 1885.—LOWERING MECHANISM FOR DENTISTS' CHAIRS.—L. Stuck, Hart, Mich.
- 333,019—December 22, 1885.—HEAD REST FOR DENTAL CHAIRS.—Alva R. Merrick, Blossburg, Pa.
- 333,216—December 29, 1885.—ARTIFICIAL TOOTH.—Charles P. Grout, New York, N. Y.
- 333,782—January 5, 1886.—ARTIFICIAL TOOTH.—Henry C. Register, Philadelphia, Pa.
- 334,529—January 19, 1886.—DENTAL VULCANIZING APPARATUS.—John Hood and Stephen H. Reynolds, Boston, Mass.
- 334,729—January 19, 1886.—TOOTH BRUSH.—Rinald S. Lakin, Boston, Mass.
- 334,985—January 26, 1886.—DENTAL ENGINE.—John O. Scott, Waupaca, Wis.
- 335,780—February 9, 1886.—DENTAL TOOL.—John W. Smith, Newport, R. I.
- 335,799—February 9, 1886.—DENTAL CAPSICUM PLASTER.—Frank B. Darby, Elmira, N. Y.
- 335,890—February 9, 1886.—ROOT DRESSER FOR DENTISTS.—Edward B. Call, Peoria, Illinois.
- 336,220—February 16, 1886.—DENTIST'S CHAIR.—John N. Farrar, New York, N. Y.
- 336,229—February 16, 1886.—DENTAL ENGINE.—Charles P. Grout, New York, N. Y.
- 336,230—February 16, 1886.—ARTIFICIAL TOOTH.—Charles P. Grout, New York, N. Y.
- 336,231—February 16, 1886.—APPLYING ARTIFICIAL TOOTH CROWNS.—Charles P. Grout, New York, N. Y.
- 336,510—February 16, 1886.—ELECTRIC MOUTH AND THROAT ILLUMINATOR.—Louis F. Criado, Brooklyn, N. Y.
- 336,777—February 23, 1886.—DENTAL PLUGGER.—Richard S. Williams, New York, N. Y.
- 336,781—February 23, 1886.—DENTAL INSTRUMENT RUBBER COVER.—Charles K. Barlow, Poughkeepsie, N. Y.
- 336,790—February 23, 1886.—DENTAL APPLIANCE.—Charles E. Brooks, Brooklyn, N. Y.
- 337,812—March 16, 1886.—DENTAL BRIDGE WORK.—George V. I. Brown, St. Paul, Minn.

Second-Hand and Shop-Worn Goods FOR SALE CHEAP.

MISCELLANEOUS.

- Wood Polishing Points. Manufactured by the patentee, Dr. Southworth. 100 in a box. Price, \$1.25; will sell for 50 cents per box.
- One Lot Jarvis Separators. Will sell for 50 cents each.
- One Lot Johnston Bros. Reflectors, to attach to Rubber Dam Clamps, throwing light into cavities. List price, \$2.75; sell for \$1.50 each.
- One Pair Plate Benders, as shown on page 290 S. S. White's Catalogue. \$1.50.
- One Pair Pin Heading Forceps. \$1.50.
- One Lot Ross Polishing Powder, for polishing Rubber Plates. Put up in 1-lb. boxes. Per box, 15 cents.
- One Lot Pin Racks, for Snow & Lewis' Automatic Points. Curved, to hold 18 or 36 points, and square, to hold 24 points. Each, 50 cents.
- One Blake's Duct Compressor. \$1.50
- Aluminum Solder, per ½ ounce, 50 cents.
- One Lot Bur Gauges, nicely Nickel-plated. Each, 25 cents.
- Plate Tooth Holder, to hold Teeth while grinding. Each, 15 cents.
- Blodgett's Tooth Wash. Per dozen, 50 cents.
- One Brass-Bound Mahogany Case, 16½ x 11 x 4¼ inches, as shown on page 212 S. S. White's Catalogue. Without trays. Cost, \$20.00; will sell for \$15.00.
- One Rolling Reclining Invalid Chair, in perfect order. Cost, \$36.00; sell for \$25.00.
- One Archer Chair, with Foot-stool attached, Crane, Table and Spittoon. Needs re-covering. \$30.00.
- One Snowden & Cowman Chair, Iron Base. Spittoon and Bracket attached (for description, see *American Journal of Dental Science*), in good order. \$45.00.
- One Haid Electric Mouth Lamp, complete, with battery, in perfect order. \$12.00.

INSTRUMENTS.

- One Lot Teeth Forceps, oval-jointed, of different makes, and a variety of shapes, all new. Per pair, \$1.50.
- One Pair Wedge Cutters. \$1.50.
- One Pair Plugging Forceps. \$1.50.
- One Pair Fulcrum Forceps. \$1.50.
- One Job Lot Steel-Handled Pluggers and Scalers, various makes, nearly all the different shapes used. Per doz., \$3.00.
- These instruments are of just as good material and temper as any now made, but the handles are of different shapes and sizes.
- One Shell-Handle Single Blade Pocket Lancet. 50 cents.
- One Johnston Cone Journal Hand Piece, in perfect order. \$7.00.

DENTAL BOOKS.

One Cole's Deformities of the Mouth. Second edition. \$1.00.

One Leber & Rottenstein's Dental Caries. 45 cents.

One Tyson's Cell Doctrine. \$1.50.

One Huxley Elementary Lessons in Physiology. \$1.00.

MACHINERY.

One Glycerine or Hot-Air Celluloid Apparatus. Cost, new, \$8.00; will sell for \$3.00. This will make an excellent flask press, having an iron pot in which the flask can be simultaneously boiled and pressed.

One Hopkins Gas Regulator, in good working order. \$10.00.

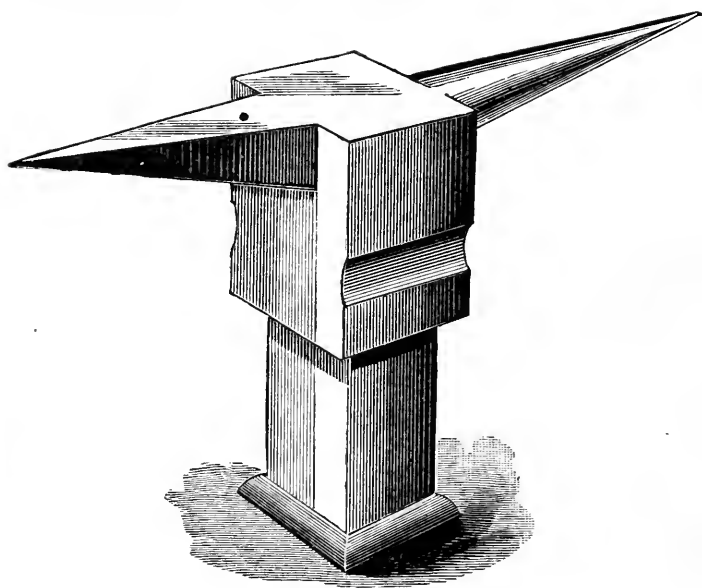
One Forty-Gallon Gasometer. \$10.00.

One Hand Lathe. \$2.00.

One Gas Apparatus, consisting of 100 gallon Cylinder, S. S. White Inhaler, Gas-bag and Tripod. All new, except Tripod. \$29.00.

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Steel Anvils.

No. 1, Polished, to hold
in vise, 50 cts.

No. 2, Polished, same
as No. 1, but mount-
ed on iron base, . . \$1.25

Soldering Tongs .

7-inch, 45 cts.
9 " 50 "
11 " 55 "

BLOW-PIPES OF ALL KINDS, LAMPS, ANVILS, HAMMERS, PLIERS, SNIPS,
FRENCH FILES, MANDRELS, CARMICHEL DIES, GOLD AND SILVER
PLATE AND SOLDER, PLATINUM PLATE AND WIRE, AND

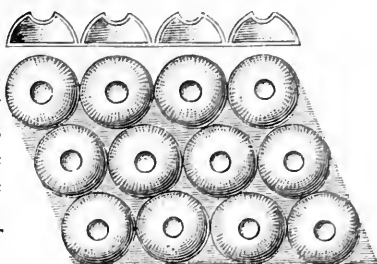
• • • ENGLISH • TEETH • • • •

ORDERS FILLED PROMPTLY.

Surface · Cohesion · Forms · for · Artificial · Dentures.

Invention of DR. JOSEPH SPYER. Patented Jan. 6, 1885; Dec. 8, 1885.

This invention consists of a thin metallic form, upon which may be made an upper and lower denture of any kind, size, or shape. The surface of the form has minute papilliform prominences—shown magnified four diameters—which, by displacement of mucus at the points of gum contact, effect surface cohesion as if the denture were glued to the gums, yet cause no irritation and leave no marked indentations. By this device strong cohesion may be had with a narrow plate, and thus the sense of taste be left unimpaired. Lower plates so made are surprisingly firm. It is now believed that surface cohesion plates inaugurate a new era in dental prosthesis.



DIRECTIONS.—For vulcanite work proceed as usual until the flask is parted and rubber packer in the tooth part. Then cut a form to size and shape. Coat the cast with rubber cement. Place on the cast the form; coat it also with cement. In packing, be careful to put but *one thickness* of sheet rubber on the middle or palatal part of the counter-flask, else the nodules or prominences of the form will be flattened by too great pressure on the center on closing the flask. Therefore let the surplus rubber be packed at the sides of the counter-flask, and the heat be great enough to thoroughly soften the rubber before pressing the model-flask and counter-flask together.

The form is made of chemically-pure tin, and will remain on the denture to provide metallic contact, but may optionally be stripped off, leaving a hard surface easily kept clean. Celluloid dentures may be perfectly made upon the forms. For metal plate work, cement a form on the cast, mold three zinc dies with lead counters, and strike up the plate.

PRICES: SURFACE COHESION FORMS, . . . Per Dozen, \$1.00
RUBBER CEMENT, Per Bottle, .35

LINE · YOUR · RUBBER · PLATES · WITH · VULCANIZABLE · GOLD

This Gold is warranted not to peel off or separate from the rubber. Any dentist who can make a rubber plate can readily apply it. No extra apparatus needed. Full directions come with each book.

PRICE, \$3.75 PER BOOK.

By the use of this Gold all objections to Rubber as a base for artificial teeth are obviated, as it prevents all irritation and poisoning of the tissues of the mouth, and makes a beautiful plate, and one that is easily kept clean. Dentists can readily obtain from \$10 to \$20 extra for a set of teeth lined with this Gold. Indorsed by some of the best dentists in the profession. Sent to any address upon receipt of price.

READ SOME OF THE TESTIMONIALS.

DR. J. A. ROBINSON, of Jackson, Mich., Manufacturer of Fibrous and Textile Metallic Filling for Teeth, says:—"I consider it a good thing, and a great advance over anything yet given to the Dental profession."

DR. W. C. BARRETT, of Buffalo, N. Y., writes:—"There is no doubt that it makes a great advance. Am satisfied it is a good thing, and there is no danger of its separating from the rubber."

DR. MAGNUSSON, of Chicago, Ill., says:—"The more I use your Gold, the better I like it. I make no plates without it."

DR. W. H. CORNELL, of Grand Rapids, Mich., says:—"I have used Vulcanizable Gold for six months, and can heartily recommend it to all. It will not corrode nor tarnish, and makes a beautiful plate. It is easily applied, and the great benefits the patient receives who wears it ought to bring it into general use. I readily get \$10.00 extra for Gold Lined Plates."

DR. J. LATHROP, of Detroit, Mich., writes, July 27, 1885:—"I have used your Vulcanizable Gold with a great deal of satisfaction, and my patients seem pleased with the result. I have used it on 12 or 15 cases, and everyone feels that it is much pleasanter in the mouth than the old rubber plates without the lining."

C. W. McNAUGHTON, D.D.S., of Grand Rapids, Mich., says:—"Having tested your Vulcanizable Gold in several cases in which rubber was proving injurious, and noting the satisfactory results following the use of this Gold, I shall hereafter make a point of introducing the same to my patients."

THE S. S. WHITE DENTAL MANUFACTURING CO., Sole Agent,
PHILADELPHIA, NEW YORK, BOSTON, CHICAGO, BROOKLYN.

Coolidge's Gas Regulator

FOR DENTAL VULCANIZERS.

[Patented October 31, 1871.]

FOUR · YEARS · OF · CONTINUED · USE · PROVES · ITS · VALUE.



IT RELIEVES THE DENTIST ENTIRELY FROM THE
CARE OF THE VULCANIZER, AND WILL BE FOUND A



PERFECT SAFEGUARD AGAINST EXPLOSIONS.



Being operated by steam pressure, it is more sensitive and accurate in its operation than the thermometer, which is operated by the conduction of heat through the body of the vulcanizer. As a consequence, it secures *superior and uniform results in vulcanizing*.

It will pay for itself many times over in the freedom from care, in the immunity from dangerous explosions, and in the time it gives the operator for the performance of other duties.

The cut-off valve is operated by the clock, giving complete control of the time of vulcanizing, as well as the temperature.

The two devices are wholly independent, as will be seen by reference to the illustration. They are made entirely of metal. No rubber is used about them in any form, except as connecting tubing, as experience has shown it to be wholly unreliable.

Catalogues giving a full description of Coolidge's Gas Regulator, mailed free upon application to the BUFFALO DENTAL MANUFACTURING CO.

PRICES.

Coolidge's Gas and Time Regulator, with 3 ft.	
rubber tubing,	\$10.00
Gas Regulator alone,	5.00
Extra Rubber Tubing, per ft.,	12 cts.

TESTIMONIALS.

BATH, N. Y., March 4, 1886.
* * * The only trouble I have with my Gas Regulator is, that I am disgusted with myself that I did not get it long ago.
A. OSGOOD.

BUFFALO DENTAL MFG. CO.:

EASTON, Pa., March 16, 1886.

Gentlemen—Have used the Coolidge Gas Regulator for over a year, and think it fills a long-felt want. Would not be without it.
Yours respectfully, T. F. KING.

MONTCLAIR, N. J., March 7, 1883.

BUFFALO DENTAL MFG. CO.:

The Coolidge Gas and Time Regulator I have found to be all that it is claimed to be, as it requires no personal attention after the vulcanizing point has been reached, so that much valuable time, heretofore spent in watching the process of vulcanizing, can be used more satisfactorily. I purchased the apparatus in November last, and have used it constantly ever since.

Respectfully, ALBERT J. WRIGHT, D. D. S.

WASHINGTON, D. C., August 6, 1884.

* * * The Vulcanizer Regulator you sent me works admirably. I don't see how I ever did without it.

J. B. HODGKIN.

[Dr. Hodgkin writes, under date of April 3, 1885: "The Coolidge Gas Regulator is a capital thing."]

SOUTH BEND, Ind., March 11, 1886.

* * * I am much pleased with the Coolidge Regulator. I have used it for two years. In fact, I would not do without it.

D. E. CUMMINS.

HANOVER, Pa., March 18, 1886.

Gentlemen—I have been using one of the Coolidge Gas Regulators for three years. It does its work satisfactorily in every particular. It requires no attention, and the office can be left for an indefinite time while vulcanizing is going on, and the work comes out O. K. I would not be without it for five times its cost.

H. C. RUTH.

BUFFALO DENTAL MFG. CO.:

SARATOGA SPRINGS, N. Y., Feb. 2, 1885.

Gentlemen—We are very much pleased with the working of the Regulator, and feel sure when a case comes out that it will be fully vulcanized, hard and tough. It is invaluable in using black rubber, and at two and three-quarters hours it brings it out so that it will take a most beautiful polish.

I was at first a little inclined to find fault with it, because I could not set it and let it go without waiting for the vulcanizer to come up to the proper temperature; but I soon found, by putting my flasks in hot, and using boiling water, that the vulcanizing point would be reached in about twenty-five minutes. So I now close my vulcanizer and set my time regulator to run one hour and twenty-five minutes, and feel sure that the work will come out all right. Every dentist should have a gas regulator, who appreciates the comfort which can be had from just such nerve-saving devices as this.

Yours respectfully,

A. C. RICH.

BUFFALO DENTAL MFG. CO.:

CHICAGO, March 18, 1886.

Gentlemen—I have used the Coolidge Gas Regulator for dental vulcanizers for two years, and am very much pleased with it. I would not part with it if another could not be obtained. It saves time and the annoyance of watching the vulcanizer, and produces a better plate.

Yours respectfully,

W. W. LAZEAR, D. D. S.

2208 Wabash Ave.

TO BUFFALO DENTAL MFG. CO.:

BRICK CHURCH, N. J., August 6, 1884.

Gentlemen—Having used the Coolidge Regulator for the last six months, during which time it has never failed to operate, I take great pleasure in recommending it to my dental brethren. I have such confidence in it, that I frequently light it in the evening and pay no further attention to it until the next morning, when I find the work thoroughly done.

Yours truly,

R. M. SANGER, D. D. S.

BUFFALO DENTAL MFG. CO.:

NEW BRUNSWICK, N. J., March 22, 1886.

Gentlemen—It gives us great pleasure to offer our testimony in regard to the Coolidge Gas and Time Regulator, for Dental Vulcanizers. We have used one for several years, and it proves to be accurate, serviceable and durable. We find it all that is claimed for it, and consider the ten dollars paid a good investment.

Yours truly,

HULL & PALMER.

MONTCLAIR, N. J., March 25, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—In November, 1882, I purchased a Coolidge Gas and Time Regulator, which has been in constant use ever since, and has never failed to do its work, and has needed no repairs. It enables me to vulcanize at any time, and at the same time give attention to other work without having to watch my vulcanizer.

Respectfully,

A. J. WRIGHT, D. D. S.

No. 12 COURT ST., BUFFALO, N. Y., March 24, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—I embrace this opportunity to say that for the past year I have been using one of your Gas Regulators for vulcanizing with no small amount of satisfaction both as to the uniform character of the vulcanized rubber, and the relief to my mind in throwing off all anxiety as to the vulcanizing process while otherwise engaged in the office. Believing that the employment of such an appliance would be a source of great comfort to many who persist in vulcanizing to accordance to the "old method," I am,

Gratefully yours,

S. A. FREEMAN.

581 BROAD ST., NEWARK, N. J., March 7, 1883.

BUFFALO DENTAL MFG. CO.:

Gentlemen—The Coolidge Gas and Time Regulator bought of you works very nicely indeed. It regulates the temperature perfectly during the process of vulcanizing, requires no watching, and in fact is indispensable in every dental laboratory.

Yours,
G. S. WENDELL.

NEW YORK, March 21, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—I have been using a Coolidge Regulator ever since their introduction, and take great pleasure in testifying to their usefulness in vulcanizing. I think every well regulated laboratory should be supplied with one where the vulcanizer is used.

Very truly,

FREDERICK H. LEE.

PALMER'S DENTAL INSTITUTE, 258 GRAND STREET, NEW YORK.

BUFFALO DENTAL MFG. CO.:

Gentlemen—Having had in constant use for the last three months one of Coolidge's Gas and Time Regulators for Vulcanizers, we have found it to answer the purpose admirably, and now find it almost indispensable. This device for the uniform maintenance of heat is so complete and thorough that one has only to give it a trial in order to be convinced. The trusting to boys or even one's self is attended with so many mishaps, that the Regulator, in our opinion, should be attached to every vulcanizer.

Yours respectfully,

W. L. DRUMMOND, Manager.

JERSEY CITY, March 18, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—The Gas Regulator I have used constantly for one year, and it has given entire satisfaction, so much so that I would not do without it, not for four times its cost. In running my vulcanizer now I feel entirely safe, and would recommend it heartily to all.

Yours,

G. M. MERRITT.

No. 8 E. Fourth St., NEW YORK, March 20, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—I have used your Regulators since 1882, and I am glad to have the opportunity to express my great satisfaction as well as warmest praise. Before I used them I never felt at ease. In fact, an anxiety for the safety of my assistants as well as myself was always present, a feeling which was very much intensified by two explosions. But now I can rest in peace. I feel sure that no accident can happen, and, to express my opinion warmly, no dentist should be without one.

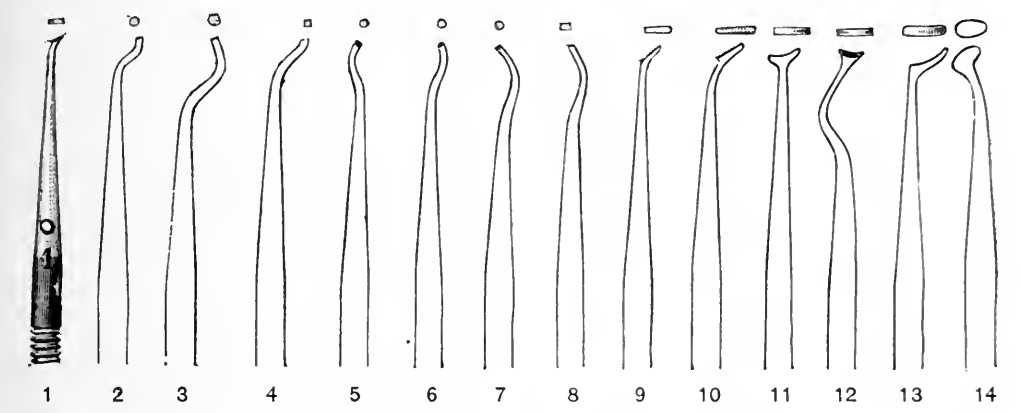
Respectfully,

WM. MICHAELIS.

SET · “L” A · NEW · SET · OF SHORT · POINTS

• • FOR • THE • •

S^{NO}W · & · LEWIS PLUGGER · AUTOMATIC



THE above selection of short Automatic Plugger Points has been subjected to a test of nearly two years, and are now brought out with the belief that they are the most completely practical set yet designed to meet all cases and situations. There is not a superfluous point in the set.

Particular attention is called to

• • • • • NUMBER · 12 • • • • •

Which is especially designed for finishing and condensing the lingual portion of fillings in incisor teeth. This is a remarkably effective point. (The cut does not properly show the angles on this point.)

• • • NUMBERS · 13 · AND · 14 • • •

Are smooth, and are designed mainly to obliterate the marks of the serrated points. No. 13 for the six anterior teeth, and No. 14 for bicuspid and molars.

PRICES SET “L” AUTOMATIC PLUGGER POINTS.		
••	Nos. 1, 2, 3, 5, 6, 7, 13, 14.	each \$0.50
	Nos. 4, 8, 9, 10, 11, 12.	each .75
	Per set of 14.	\$8.50

THE SNOW & LEWIS AUTOMATIC PLUGGER.

Patented October 24, 1865, October 30, November 20, 1866, June 23, 1868, and June 1, 1869.
Patent of October 30th, 1866, re-issued August 22, 1876, February 2, 1880.

THE MOST POPULAR AND EFFICIENT DENTAL INSTRUMENT EVER OFFERED TO THE PROFESSION.

This instrument, since its invention in 1865, has been improved from time to time, and has become one of the best known and most indispensable adjuncts to the dentist's operating case. It is now made after two patterns, the old and new style. The "old style" of instrument has

TWO DISTINCT GRADES OF BLOWS,

one-eighth and one-quarter inch, regulated by means of the ring on the body of the instrument; the finer graduation of the strength of the blow being attained by turning the milled head at the end of the case.

The "new style" embodies an improvement, by which all lateral motion between the socket-piece and its bearings is prevented, and future wear between the parts provided for. This insures

PERFECT STEADINESS OF THE POINT,

which can now be placed as desired with the same certainty as with a hand instrument. The new instrument has but the one-eighth inch length of blow, which can be varied in strength, as before, by the milled head at the end of the case. By means of the ring on the handle, either of

THE PLUGGERS CAN BE LOCKED,

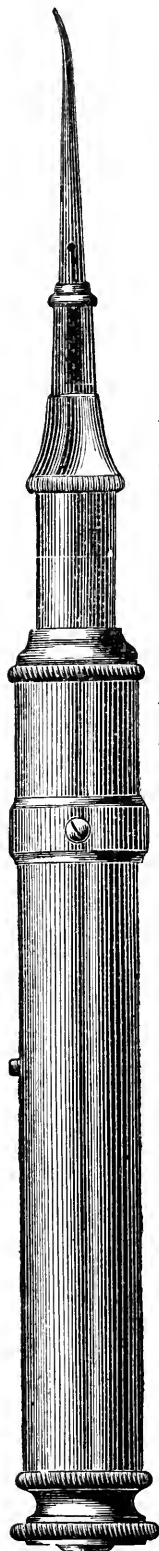
and used as a hand instrument. The above feature is not presented in any other Spring Plugger in the market.

The mechanical devices of the Plugger are protected by patents, embracing all points of any moment applicable to Automatic Pluggers, and we hardly need say that we shall strictly enforce all the rights secured to us therein.

PRICES.

Automatic Plugger, triple Gilt, No. 1 or 2,	\$13.00
Automatic Plugger, Silver or Nickel-plated,	9.00
Points, per dozen,	3.50
Varney's Points, per set of 13,	7.00
Butler's Points, per set of 16,	6.00
Enamel Chisels, per set,	2.25
Morocco case, with Point Rack,	3.50

Points of any desired pattern furnished to order.



CAULK'S FILLING MATERIALS.

ESTABLISHED 1877.

GRAY.
YELLOW.
PRICE, \$2.00.
MEDIUM.
LIGHT.

TWO COLORS.—Gray and Yellow, \$1.50 per Package.

ONE COLOR.—Gray, Medium, Yellow, or Light, 1.00 “ “

THIS COMPOUND NOW STANDS WITHOUT A RIVAL. From Five to Seven Years' Test by leading Dentists throughout the World has proved it to be all that has been claimed for it.

FOR MOUNTING ARTIFICIAL CROWNS—It has been highly recommended, is non-irritating, non-conducting, and in harmony with tooth structure.

IT WILL HARDEN IN WATER OR SALIVA. It does not deteriorate with age. We have some over THREE YEARS OLD, and it works as nicely as when first made. The liquid does not crystallize, and we have increased the quantity in all packages. All bottles are lettered with “CAULK'S DIAMOND CEMENT.”

The Universal Verdict Is that CAULK'S DIAMOND CEMENT IS THE BEST. A Fair Trial will convince you.

.. CAULK'S . PAR . EXCELLENCE . ALLOY ..

THIS GOLD and PLATINA ALLOY IS MANUFACTURED on a NEW PRINCIPLE. SAVES TEETH WHERE OTHERS FAIL.

It is the result of a long series of experiments, and has been in constant use for several years. By our new method of manufacture there is no GUESS WORK, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

PRICE, in 1-3, 1-2 and 1 oz. packages, per oz., \$3.00; 2 oz., 5.00.

.. CAULK'S . WHITE . ALLOY ..

HAS BEEN GREATLY IMPROVED, COSTING MORE TO PRODUCE IT. THERE IS NOTHING EQUAL OR SUPERIOR TO IT.

Is of a peculiar grayish-white color. When amalgamated in the hand it works with a soft and velvety feeling. Is very DENSE, and so malleable that it can be malletted with the greatest ease. Has been highly recommended in Combination Fillings of Gold and Amalgam. When properly manipulated with PURE MERCURY it will retain its color under all circumstances.

PRICE, in 1-4, 1-2 and 1 oz. packages, per oz., \$4.00; 2 oz., \$7.00.

.. CAULK'S . DIAMOND . POINT . STOPPING ..

This form of Gutta-percha having been in the market for several years, has stood the greatest test of all—that of time. It is regarded as the best preparation of its kind for filling teeth in the world.

The stopping is put up in *sealed envelopes*, and the Pellets and Cylinders in *sealed boxes*, each bearing a fac simile of our signature.

PRICE, in 1-8, 1-4, 1-2 and 1 oz. packages, per oz., (reduced to) \$2.00.

We make a Specialty of Manufacturing these Materials for Filling Teeth, and they are Sold by Troy Weight.

OVER FIFTEEN THOUSAND (15,000) Dentists are using these materials throughout the world. What better evidence do you wish of their Superiority and Excellence.

L. D. CAULK, Manufacturer & Proprietor, CAMDEN, Delaware.

SOLD AT ALL DENTAL DEPOTS.

ENGLISH TEETH

• FOR • METAL, • FOR • RUBBER, • FOR • BRIDGE • AND • CROWN • WORK. •

MANUFACTURED
BY

CLAUDIUS ASH & SONS, LONDON,
ENGLAND.

THESE TEETH are all PLAIN TEETH and all the pins are without heads, but the pins are long and very tough. Bend the pins directly away from each other, or up or down, as is best suited to the case.

ENGLISH TEETH FOR BRIDGE-WORK.

IT is only necessary to say that these are THE TEETH for Bridge-work, and we have a good selection, and will give careful attention to orders.

PRICE, 10 Cents per Tooth.

• • • ENGLISH PINLESS TEETH. • • •

PRICE, 5 Cents per Tooth, in Sets of Sixes and Fourteens.

C. ASH & SONS' MINERAL TEETH Possess the Following Desirable Qualities:

1. NATURAL FORMS—In great variety and of various sizes and lengths.
2. COLORS—Ranging from very light to very dark shades, and closely resembling the various colors of the human teeth.
3. TEXTURE—Non-porous, so that they can be ground and polished to suit particular cases, therefore being well adapted for Bridge-work.
4. STRENGTH—Possessing unusual strength on account of their fine and close texture.
5. SOLDERING—Bearing in an extraordinary manner the sudden transitions of temperature, so that they can be soldered without cracking.

BUFFALO DENTAL MANUFACTURING CO.

• • • • WOLRAB'S • • • • GERMAN • GOLD

— • FOR • THE • —

HERBST • METHOD • OF • FILLING • TEETH.

FOIL • OR • CYLINDERS.

This Gold is made in reference to the HERBST method of filling teeth with the engine. It has also proven a very desirable article for the *mallet* and *hand-pressure*.

The manufacturer claims it to be superior to any other make for its peculiar *softness*. It easily adapts itself to the walls of the cavity, and when properly manipulated it makes a *solid* and *cohesive filling*. If it is to be used cohesively, a slight *warming over* the flame will have the desired result.

PRICE.

Foil, \$4.00 per $\frac{1}{8}$ oz., \$15.00 per $\frac{1}{2}$ oz., \$30.00 per 1 oz.
Cylinders, . . \$4.50 per $\frac{1}{8}$ oz., \$17.00 per $\frac{1}{2}$ oz., \$34.00 per 1 oz.

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

SAMSON RUBBER

MANUFACTURED BY

EUGENE DOHERTY,

Nos. 417 & 419 Kent Ave., Brooklyn, E. D., New-York.

WARRANTED TO BE

THE STRONGEST AND MOST UNIFORM RUBBER MANUFACTURED.

It is the TOUGHEST and Most Durable Rubber Made. Vulcanizes same as Ordinary Rubber.

TO DENTISTS,
IN LOTS OF
TEN POUNDS
AT ONE TIME,
10 PER CENT. OFF
RETAIL PRICE.

SAMSON RUBBER.



MANUFACTURER OF ALL KINDS OF

DENTAL RUBBERS AND GUTTA PERCHAS.

PRICE LIST OF DENTAL RUBBERS AND GUTTA PERCHAS.

No. 1 Red Rubber, per lb.,	\$2.25	No. 1 Red Weighted Rubber, per lb.,	\$4.00
No. 2 Red Rubber, per lb.,	2.25	No. 2 Red Weighted Rubber, per lb.,	4.00
Samson Rubber, per lb.,	2.75	Black Weighted or Amalgamated	
Black Rubber, per lb.,	2.25	Rubber, per lb.,	4.00
Flexible or Palate Rubber, per lb., .	2.75	Weighted Gutta Percha, per lb., . .	4.00
Gutta Percha for Base Plates, per lb.,	2.25	Adamantine Filling or Stopping, per	
Vulcanite Gutta Percha, per lb., . .	3.50	oz.,	4.00

NOTE.—The above Rubbers and Gutta Perchas will be furnished in pound or half-pound packages to any Dentists in the country on receipt of price, and stating that they cannot get them at the Dental Depots in or near their place of business. Circulars giving full instructions how to use all of my Rubbers and Gutta Perchas, will be found in each box or package with the article ordered.

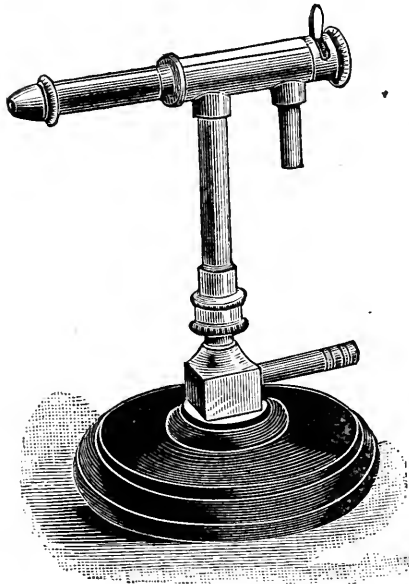
EUGENE DOHERTY, 417 & 419 Kent Ave., Brooklyn, E. D., New York.

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FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

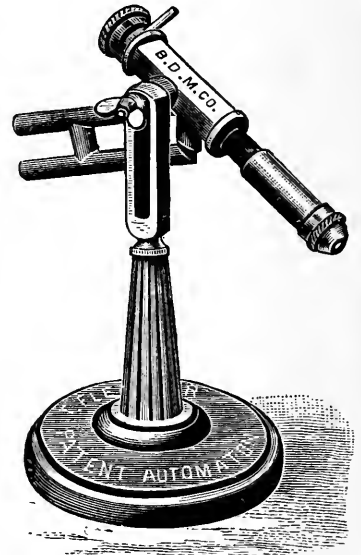
SOLDERING APPARATUS

... FOR GOLD CROWN WORK. ...



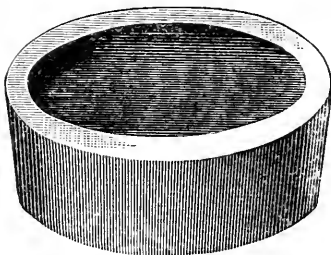
Automaton Blow-Pipe—No. 6 A.
Price, \$4.00.

The increasing use of the Richmond and other patterns of artificial crowns has created a demand for better appliances for soldering gold than have heretofore been in use in dental laboratories, and the articles here illustrated are presented as forming a complete outfit for the purpose. Two forms of the Automaton Blow-Pipe are shown. The No. 6 A is mounted on a ball-joint, situated imme-



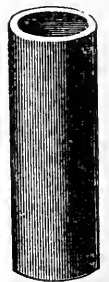
Automaton Blow-Pipe—No. 6 D.
Price, \$4.50.

diately above the base, and is capable of motion in any direction. The No. 6 D is fastened to an upright by means of a thumb-nut. It can be removed and used in the hand when it is desirable to do so. The size of the flame is adjustable by means of the small lever shown at the butt end of the Blow-Pipe, which regulates the supply of both gas and air by the same motion, giving the most complete control of the heat.



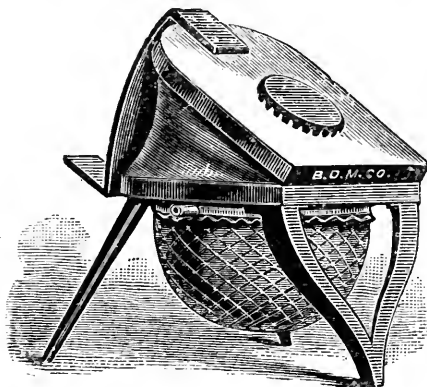
Carbon Block. Price, 25c.

The cupped ends of the Carbon Cylinders are admirable supports for the crowns while soldering. The Carbon Blocks are four inches in diameter, and the Cylinders $1\frac{1}{8} \times 3$ inches. They are perfect non-conductors, and much more cleanly to use than charcoal.



Price, 15c.

Carbon Cylinder.



Foot-Bellows—No. 9. New Style.
Price, \$5.00.

The No. 9 New Style Foot-Bellows is well adapted for furnishing the blast required for soldering. The elasticity of the rubber disk keeps a uniform pressure of air. The use of the Bellows will be found much preferable to furnishing the blast from the lungs.

For further description of these and other forms of Gas Blow-Pipes and Soldering Apparatus, send for our Price List of Fletcher's Laboratory Apparatus. Just issued.

Manufactured only by the

BUFFALO DENTAL MANUFACTURING CO.

• ENDLESS • VULCANIZER PACKING.

There has been some demand for an endless packing for the Whitney Vulcanizer, and we have at last succeeded in obtaining some, equal in quality and similar in structure to the packing strips commonly used. There are rubber rings sold as endless packing, which are wholly unsuitable for the purpose. These can be relied upon as a good article.

PRICE, . . . 8 CTS. EACH.

AKRONDENTAL • RUBBER.

The material of which this Rubber is composed is prepared by a new process, which insures

ABSOLUTE PURITY,

RESULTING IN A PRODUCT OF
WONDERFUL

DENSITY, • FINENESS • AND • STRENGTH.

It is especially designed to meet the requirements of those who seek to produce the most perfect and artistic work. It is exceedingly tough and light, and takes a beautiful polish. Plates may be made very thin without splitting or crumbling away about the edges. It can be used with the best results for making

PARTIAL LOWER DENTURES, an advantage which no other rubber possesses. It has the unqualified approbation and endorsement of the profession everywhere, and never fails to give satisfaction.

PRICE, \$3.00 PER POUND.

For Sale by BUFFALO DENTAL MFG. CO.

MERCURY • • •



Re-Distilled.

The purer the Mercury used in preparing amalgam, the greater the assurance of a successful operation.

• The B. D. M. CO'S •
Re-Distilled • Mercury

IS AS PURE AS CAN BE PROCURED.

PRICE PER BOTTLE, . . . 40 CENTS.

THE TRADE SUPPLIED.

REDUCTION IN PRICE.

• FLETCHER'S •

Gutta • Percha • Hydraulic

• CEMENT. •

PRICE PER CAKE, . . \$1.00

SCIENTIFIC AMERICAN ESTABLISHED 1846.

The most popular **Weekly** newspaper devoted to science, mechanics, engineering discoveries, inventions and patents ever published. Every number illustrated with splendid engravings. This publication furnishes a most valuable encyclopedia of information which no person should be without. The popularity of the **SCIENTIFIC AMERICAN** is such that its circulation nearly equals that of all other papers of its class combined. Price, \$3.20 a year. Discount to Clubs. Sold by all newsdealers. MUNN & CO., Publishers, No. 361 Broadway, N. Y.

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R. S. WILLIAMS,

MANUFACTURER OF

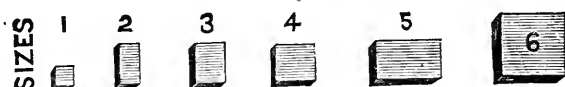
Standard Gold Foil,

Standard Gold Cylinders,



Standard Gold Pellets,

Standard Gold Blocks,



Over one hundred and fifty varieties kept in stock, each differing in quality, size or style.

Standard Electric Gold,


Gold and Platinum Folds.

Amalgam Alloy No. 1,

Standard Gutta Percha Blocks, for Fillings,

Standard Dental Rubber,

ARE THE BEST.

 Send for Price List and Descriptive Circular.

R. S. WILLIAMS,

No. 115 West 42d Street,

(Seven doors West of Sixth Ave.)

NEW YORK, N. Y.

FOR SALE BY BUFFALO DENTAL MANUF'G CO.

New · Specialties · in · Gold FOR FILLING.

• • • • •

SOFT · BURNISH · GOLD · CYLINDERS.



Sizes, $\frac{1}{2}$, 1, 2, 3, and assorted.

These cylinders are made with particular reference to the new system of packing gold with engine burnishers.

They also have excellent qualities for use with Mallet or Hand Pluggers.

A prominent New York operator says: "As a soft gold they surpass anything I ever used."

• COHESIVE · BURNISH · GOLD · CYLINDERS ·



Sizes, $\frac{1}{2}$, 1, 2, 3, and assorted.

Are similar to the above, but are *fully Cohesive*. They also have the quality of toughness, so the *plugger point carries the gold before it* instead of cutting through. It is claimed for them that they possess, in the highest degree so far known, the

MAXIMUM OF COHESION WITH THE . . . MAXIMUM OF SOFTNESS AND TOUGHNESS

• • • • •

It is believed these two varieties of Burnish Gold Cylinders possess such desirable and hitherto unobtained working properties, that they are well worth a trial by all first-class operators.

\$4.50 per $\frac{1}{8}$ oz.—\$17.50 per $\frac{1}{2}$ oz.

For Sale by
B. D. M. CO.

R. S. WILLIAMS,
No. 115 WEST 42d STREET,

NEW YORK
CITY.

JUST THE THING! NEW! NICE! PRACTICAL!

EVERYBODY IS USING THEM.

DENTAL CAPSICUM PLASTERS

PAT'D FEB. 9, 1886.

Made of the same ingredients as the popular "pepper bag," and are more effectual; very cheap; nicely flavored; soft and flexible; with thick felt back; will stick to the gums; will not dissolve in the mouth or impregnate the saliva with pepper; smart only on the gums; gotten up in nice style, and pleases everybody.

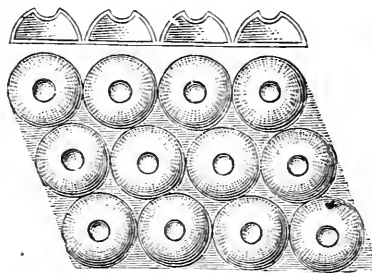
For securing resolution or suppuration in inflammatory conditions of the pericemental membrane, and for the relief of all pulp irritation, they have no equal.

Sent to any address, Six Dozen for \$1.00.

Prepared by FRANK B. DARBY, D. D. S.,

126 East Water Street, ELMIRA, N. Y.

[oct-85-1y.] FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.



Surface Cohesion Forms for Artificial Dentures.

A system by which Artificial Dentures can be made much smaller, and hold firmly, as the cohesion extends over the whole surface of the plate, instead of only at one point as in the central air or suction chamber. By the use of the *Surface Cohesion Forms* the sense of taste is not impaired nor is there any irritation. The inner surface of the plate will be covered with semi-oval projections (as seen in cut enlarged four diameters) the whole length of the plate, which causes it to stick to the gums as if it were glued, and without causing any irritation of the membrane.

The *Surface Cohesion Forms* are cemented on the cast, with liquid rubber, the *Surface Form* being correspondingly cut; after the wax is boiled out, and flask packed, the flask is screwed together, and when vulcanized, the palatal surface of the plate will be covered with semi-oval projections its entire length, and with a beautiful clean finish. For gold, platinum or any metal, cement the "surface cohesion form" to plaster cast, mould in sand, make three zinc dies, and lead counter dies and swag up plate.

SURFACE COHESION FORMS, put up neatly in boxes of one dozen, with full directions, \$1.00
Liquid Rubber, per bottle, 35 cents; per dozen bottles, 4.00
For sale at all Dental Depots.

A method of preparing Rubber plates for the vulcanizer without waxing or flasking. Full instructions furnished for \$5.00 on application to

Dr. J. SPYER, 245 East 19th St., New York City.

PHILADELPHIA, July 13, 1885.—The undersigned have witnessed a satisfactory clinic given by Dr. Spyer of his new method of constructing vulcanite plates.

S. H. GUILFORD, D. D. S. A. P. BEALE, D. D. S.
FRANK R. FABER, D. D. S. H. M. SHEPPARD, D. D. S.
THEODORE F. CHUPEIN, D. D. S. THOMAS W. BUCKINGHAM, D. D. S.
CHAS. F. BONSALE, D. D. S. GEO. W. CUPITT, D. D. S.

[oct-85-1y]

THE
ROBINSON • REMEDY

A SURE CURE FOR
PYORRHOEA ALVEOLARIS, AND OBTUNDER FOR
SENSITIVE DENTINE.

PREPARED BY

SAM'L A. CROCKER & CO.



Ohio • Dental • and • Surgical • Depot,
CINCINNATI, OHIO.

DIRECTIONS.—Clean all the calcareous deposit from the teeth with a thin, sharp chisel, pushing the chisel always towards the apex of the tooth, and clear down to the alveola ridge; make a fine rope of fibers of cotton by twisting it between the thumb and finger, a little larger than floss silk; cut the ropes into the length desired to go round the teeth to be treated, and do not treat more than four or five at one time; wet the ropes with the remedy and lay them on a napkin to absorb all that will come off, and place them round the necks of the teeth and push down thoroughly to the alveola border: when you have done one tooth do the next and remove the rope from the first, and so on until all are treated.

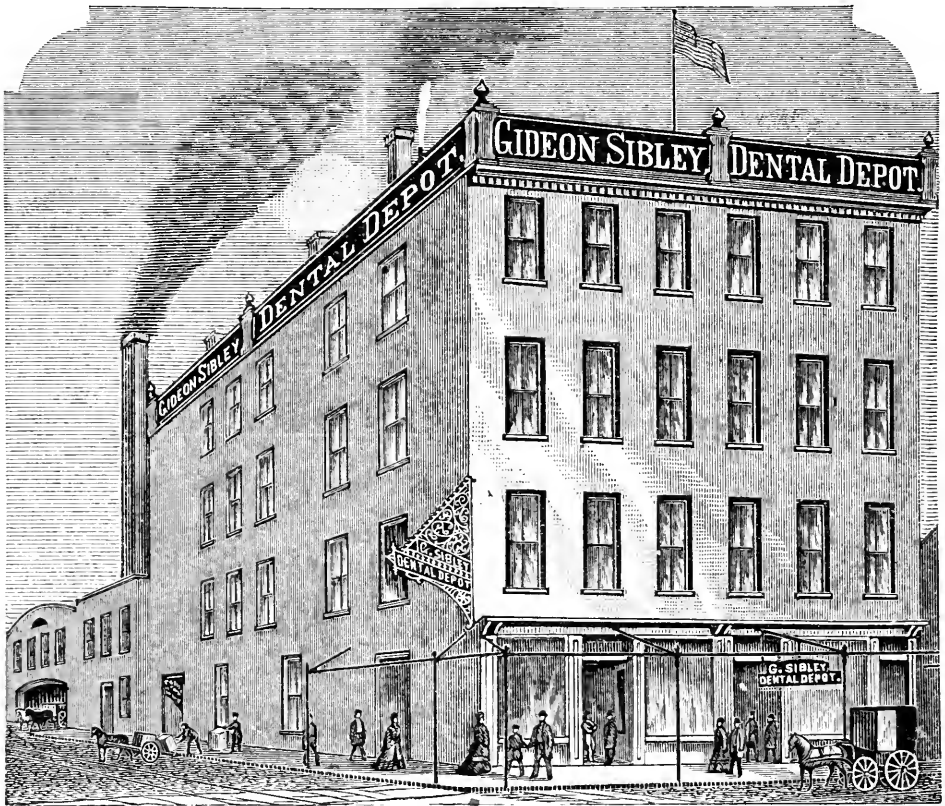
As a rule one application will cure. If the teeth are loose, take a fine binding wire and wire them to the adjoining teeth that are not loose; and in two or three days the pockets will all be closed and the teeth tight and well. For sensitive dentine and exposed pulps, wet a pledget of cotton and apply directly to the cavity—it will coagulate the serum in the tubuli and cut off all communication with the nerve, and the operation will be painless.

SAM'L A. CROCKER & CO.

PRICE, 50 CENTS PER BOTTLE.

GIDEON SIBLEY,
MANUFACTURER OF
ARTIFICIAL TEETH
AND DEALER IN
DENTAL SUPPLIES,

THIRTEENTH AND FILBERT STS., - - PHILADELPHIA, PA.



It is gratifying to find, that after years of assiduous labor to produce the best Tooth made, their superiority is so universally acknowledged, and the rapid demand for them has necessitated large additions to our factory and salesroom.

POINTS ON WHICH WE SEEK COMPARISON:

STRENGTH, NATURAL SHAPES, TEXTURE, COLORS, LARGE DOUBLE-HEADED
PINS, &c., COMBINED WITH OUR VERY LARGE ASSORTMENT
OF MOULDS AND VARIETY OF SHADES.

ASK YOUR DEALER FOR THEM, OR SEND ONE DOLLAR FOR A SAMPLE SET.

[ja85-ry] FOR SALE BY BUFFALO DENTAL MFG. CO.



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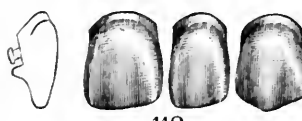
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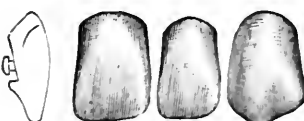
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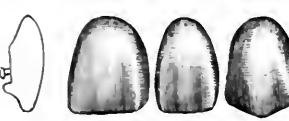
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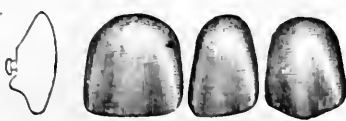
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GIDEON SIBLEY,
 MANUFACTURER,
 13th and Filbert Streets,
 PHILADELPHIA, PA.

FLETCHER'S

Carbolized · Resin

IS HIGHLY RECOMMENDED AS A SUBSTITUTE FOR CREOSOTE IN NEARLY
EVERY CASE; BEING MUCH MORE EASILY HANDLED, MORE EFFECTIVE
AND LESS DISAGREEABLE TO THE PATIENT THAN CREOSOTE, AND LEAVES

NO · ODOR · IN · THE · OPERATING · ROOM

ON making the application, gently clear the cavity without excavating, dry it with spunk or absorbent cotton, and then apply carbolized resin on a small ball of cotton, sealing over with a very thin sheet of wax. The sealing is not absolutely necessary, as the CARBOLIZED RESIN IS ALMOST INSOLUBLE. In most, if not all cases of exposed nerve, a few applications will so entirely destroy the sensitiveness that the tooth may safely be filled without capping. It is an invariable specific for "tooth-ache," so-called. . . .

In addition to its other valuable properties, Fletcher's Carbolized Resin will be found to be the

* * MOST RELIABLE STYPTIC * *

in obstinate cases of bleeding. A plug of amadou or cotton, wet with Fletcher's Carbolized Resin and packed in the cavity, will stop bleeding instantly in cases where other remedies have failed.

PRICE, 25 CENTS PER BOTTLE.

If it Becomes Crystalline or Too Thick for Use, add a Few Drops of Chloroform.

COPAL-ETHER VARNISH.

FLETCHER'S COPAL-ETHER VARNISH IS MUCH BETTER
THAN SANDARAC VARNISH FOR ALL PURPOSES.

PRICE, 25 CENTS PER BOTTLE.

FOR SALE BY ALL DEALERS IN DENTAL GOODS.

JAMES V. LEWIS, No. 15 COURT STREET, BUFFALO, N. Y.

IF YOU WANT

FORCEPS—CORRECTLY MADE,

EXCAVATORS—KEEN CUTTING AND WELL TEMPERED,

PLUGGERS—ALL KINDS, FINELY SERRATED,

AMALGAM INSTRUMENTS—EVERY KIND,

BONWILL ENGINE PLUGGER POINTS,

ELECTRIC Mallet PLUGGERS,

AUTOMATIC PLUGGER POINTS PROPERLY FITTED,

ENAMEL CHISELS THAT WILL DO THEIR WORK,

RUBBER DAM FORCEPS AS THEY SHOULD BE,

FOIL CARRIERS—ALL KINDS,

ENGINE BURS—BEST QUALITY, OR

REPAIRING CAREFULLY ATTENDED TO,

SEND TO

LUKENS & WHITTINGTON,

DENTAL INSTRUMENT MANUFACTURERS.

626 RACE STREET, - - PHILADELPHIA, PA.

LAWRENCE'S AMALGAM.

“THE OLD RELIABLE.”

This Amalgam has received the endorsement of the Profession at large for over forty years, which would seem to render any remarks as to its excellence superfluous. Retail price, Three Dollars per ounce.

Purchase only of reliable dealers, their agents, or of the inventor and only manufacturer,

AMBROSE LAWRENCE, 476 Columbus Ave., Boston, Mass.

Low's Counter-Irritant Dental Plasters.

The application of counter-irritants to the gum, in the form of a plaster, has some advantages over the ginger or pepper bag, as the plaster can be made to adhere to the gum, and is less bulky. It will, therefore, easily retain its place, and the effect will be more prompt and certain, the action of the remedies not being interfered with by a constant wash of saliva.

It is questionable if one degree of stimulation should be expected to answer the purpose equally well for all stages of pericemental inflammation, and in order to meet the varying indications which are presented, three different plasters have been devised, as follows:

PLASTER No. 1 is a very mild stimulant, suitable rather for warding off threatened inflammation, than for reducing it when present. It is recommended for use after filling pulpless teeth or setting artificial crowns.

PLASTER No. 2 is a more rapid stimulant, composed of capsicum, and is applicable to all cases when it is desired to bring about resolution instead of hastening suppuration.

PLASTER No. 3 is a Mustard Paste, and is by far the best application when suppuration is inevitable and the desire is to hasten the discharge and relieve the patient.

Each bunch of six plasters is wrapped in tin-foil to prevent deterioration by exposure to the air, making a convenient package for the patient.

They are put up in boxes containing nine dozen of either kind or assorted. Price, \$1.00 per box.

Prepared by **DR. F. W. LOW, Attica, N. Y.**

BUFFALO DENTAL MFG. CO., General Wholesale Agents.

KING'S OCCIDENTAL AMALGAM.

PRICE REDUCED TO \$3.00 PER OZ.

This Amalgam has been before the profession in Ohio and Western Pennsylvania for some years, and all who have used or tested it agree that it has merits over any other Amalgam in the market.

The process of manufacture differs from that of other Amalgams, and

BY A NEW INVENTION

Dr. King is enabled to obtain better results, both in regard to COLOR, SHRINKAGE, and EXPANSION, than is obtained in any other alloy in the market.

Test for color consists of sixty grains of Sulphuret of Potassa, dissolved in one ounce of water. Amalgam plugs to be left in this solution twenty-four hours or more. The Occidental will remain bright after this test, and we know of no other Amalgam, at even double the price, but that will discolor. All who would use the best should buy

KING'S OCCIDENTAL AMALGAM.

TESTIMONIALS.

I believe the Occidental Amalgam has *no equal* in the market to-day.

PITTSBURGH, September 22, 1881.

GALE FRENCH, D. D. S.

I think the Occidental Amalgam superior to any I have ever used.

PITTSBURGH, September 22, 1881.

J. G. TEMPLETON, D. D. S.

ASK YOUR DENTAL DEPOT FOR IT, OR SEND TO

**RANSOM & RANDOLPH, Wholesale Agents,
83 JEFFERSON STREET, TOLEDO, OHIO.**

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

Give us your Subscription now for 1886.

OHIO STATE JOURNAL OF DENTAL SCIENCE

A Monthly Journal of 48 to 56 pages, for Two Dollars per Year.

Editor: GEO. WATT, M. D., D. D. S., Xenia, Ohio.

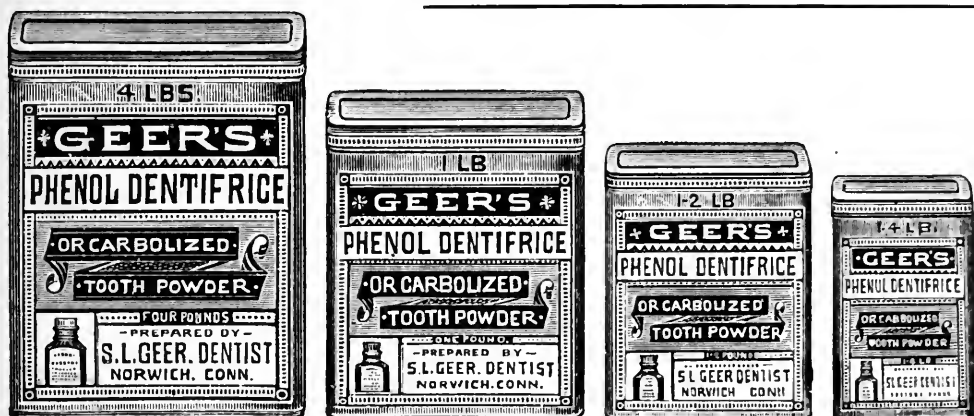
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**RANSOM & RANDOLPH,
TOLEDO, OHIO.**

[ja86-1y.]

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GEER'S PHENOL DENTIFRICE



This Standard Preparation

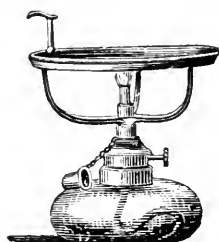
by far excels any dentifrice ever offered to the public. This assertion is corroborated by the numerous encomiums received from leading dentists in all parts of the country, and by the large and constantly increasing sales.

CARBOLIZED TOOTH POWDER

is of inestimable value in *preserving* and *beautifying* the teeth, *strengthening* the gums and giving pleasant fragrance to the breath. It prevents and arrests decay, polishes and preserves the enamel to which it imparts a pearl-like whiteness. Its unprecedented success for ten years shows the universal favor in which it is held, while the fact of its being compounded of the choicest materials, selected with extreme care, constitutes it the purest and safest tooth powder now in use. Put up in

$\frac{1}{4}$, $\frac{1}{2}$, 1 and 4-lb. Cans,	\$1.00 per pound.
10-lb. . . . .	.90 "
20-lb. . . . .	.80 "

FOR SALE BY BUFFALO DENTAL MANUFACTURING COMPANY,
IN ANY QUANTITY, WHOLESALE OR RETAIL.

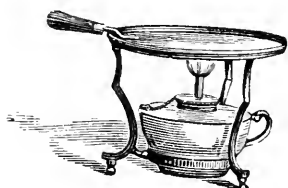


The Whitney Annealing Lamp.

This is a glass lamp, with a thumb-piece for adjusting the size of the flame. The brass frame which holds the tray is removable, and also fits the Laboratory Gas Burner, enabling the dentist to use either Alcohol or Gas. Diameter of Tray, 4 inches. Height of Lamp, $3\frac{3}{4}$ inches.

PRICE.

Whitney Annealing Lamp, \$1.50

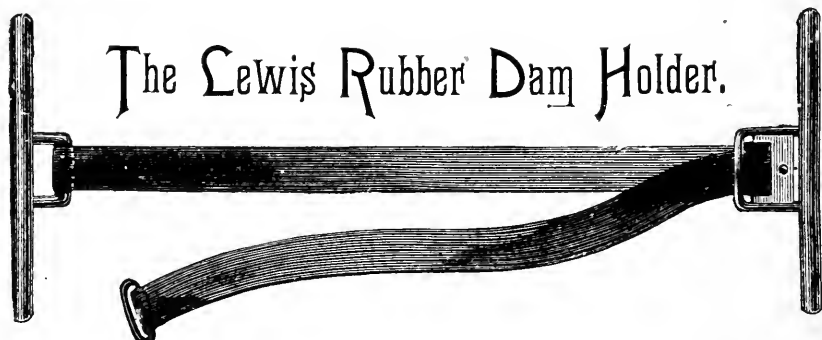


The Lewis Annealing Lamp.

This consists of a brass ornamental tripod $3\frac{3}{4}$ inches high, holding a tray 4 inches in diameter, with Britannia Lamp.

PRICES.

Lewis Annealing Lamp, \$1.50
 Lewis Annealing Lamp, Silver Plated, 3.00



The Lewis Rubber Dam Holder.

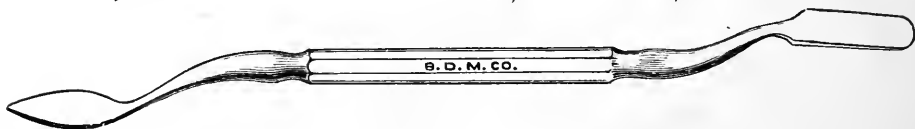
This is a device for holding the rubber dam in position while operating. It is much more effective than the ordinary rubber dam holder. The rubber being smoothly stretched over the patient's lips and cheeks, is therefore entirely out of the way of the operator. The holder is secured to the rubber by simply being stretched over the ends of the bars, and is held in place by its own contraction.

The improvement consists in a slotted slide, through which the braid passes, enabling the operator to produce tension by drawing on the free end of the braid, or to relieve the strain by pushing the slide back with the thumb nail.

PRICE.

The Lewis Rubber Dam Holder, Nickel-plated, 50 cents.

Spatula for White Plastic Fillings.



This is a new pattern of Spatula (designed by Thomas Fletcher, F. C. S.,) for mixing white plastic filling materials, and is recommended more especially for the PORCELAIN CEMENT, as a broad rigid spatula with a firm grip for the hand is a necessity for the proper mixing of this material.

PRICE.

Fletcher's Spatula, Nickel-plated, 60 cents.

Snow's · Saliva · Ejector.

Pat. March 18, 1870.

"STANDARD" STYLE, WITH THE
ROLLINS EXHAUST BOTTLE.

Cleanly, · Efficient, · Noiseless · in · Action.

Can be Used Without a Water Supply.

This apparatus has lately been improved by the addition of the Rollins Exhaust Bottle, suggested by Dr. W. H. Rollins, of Boston. This is shown in the illustration as connected with the Standard Ejector, but it is equally applicable to the Wall Pattern. The bottle is placed under the chair, the ejector exhausting the air therefrom, and the saliva descends directly into the bottle, where it remains; the air passing over with it being drawn into and expelled from the ejector.

This addition enables the ejector to operate with greater freedom, and with less water than is required when the exhaust bottle is not used.

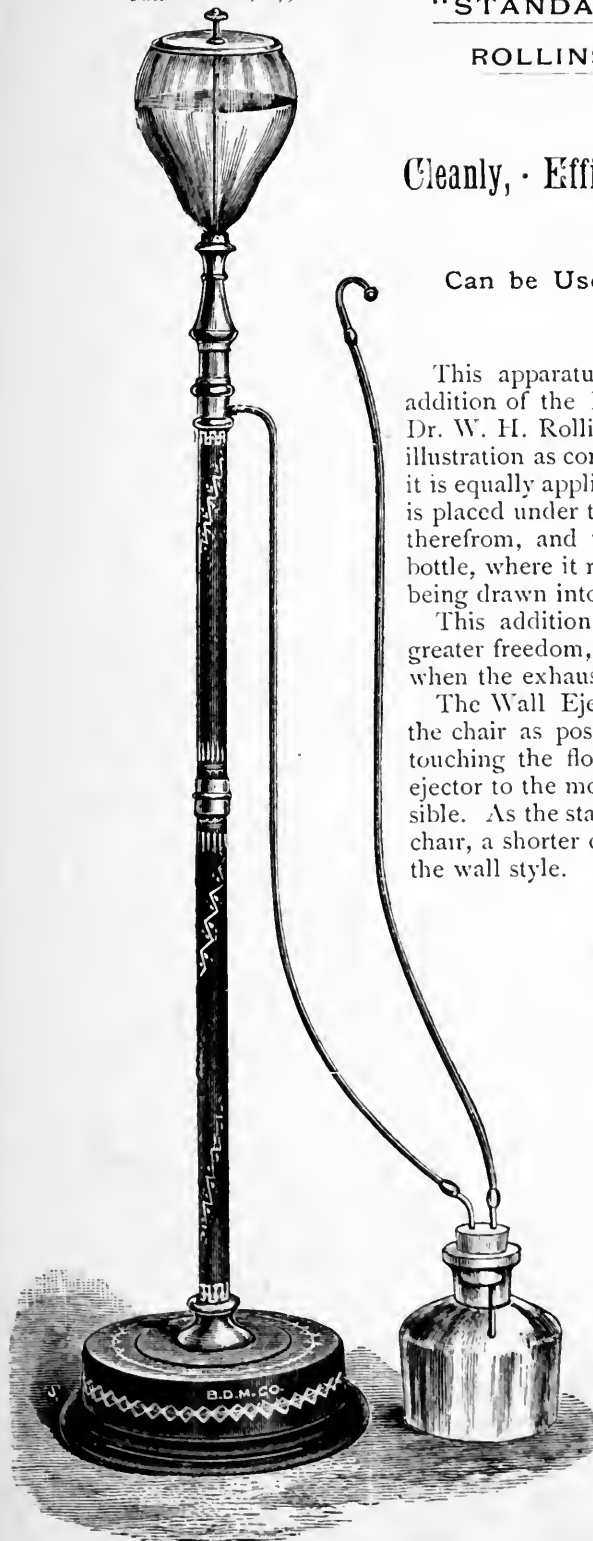
The Wall Ejector can be hung to the wall as near the chair as possible, with the lower reservoir nearly touching the floor. The connecting tube from the ejector to the mouth-piece should be as short as possible. As the standard Ejector can be set closely to the chair, a shorter connecting tube can be used than with the wall style.

If the exhaust bottle is used, the same water can be used many times over, as it is not contaminated with saliva, and the ejector can be placed in any convenient place, a long connection being in this case admissible—a matter of great convenience in many operating rooms.

The mouth-piece and tube should be rinsed after use by allowing a tumbler full of water to run through them, and the mouth-piece thoroughly washed. It can then be replaced on the rubber tube, which it is well to remove from the ejector and hang on the wall to drain. Glass mouth-pieces may be used for the fastidious, each patient having the exclusive use of one.

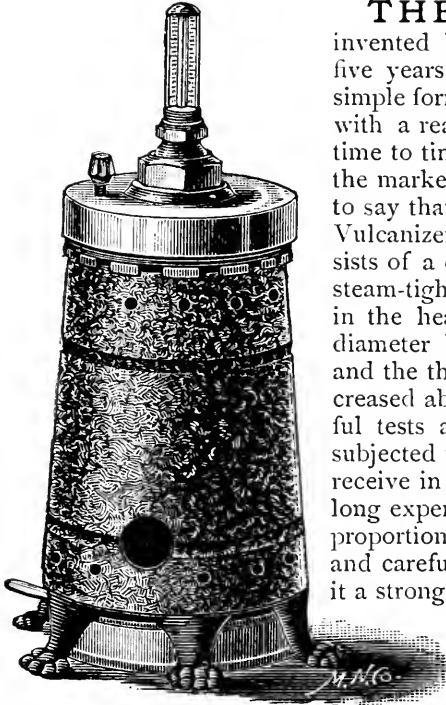
PRICES.

Wall Saliva Ejector, with four feet of Rubber Tubing, . .	\$15.00
Standard Saliva Ejector, with four feet of Rubber Tubing, . .	18.00
Rollins' Exhaust Bottle, . .	1.00
Glass Mouth-Pieces, each, . .	.20
Boxing,	1.00



"Standard" Style, with the Rollins Exhaust Bottle.

Dental • Vulcanizers.



THE WHITNEY VULCANIZER, invented by the late Dr. B. T. Whitney more than twenty-five years ago, has always had the name of being the most simple form of vulcanizer in existence, and it has always met with a ready sale. Attempts which have been made from time to time by different parties to place imitations of it upon the market, have met with very limited success, and it is safe to say that there are to-day more of the genuine Whitney Vulcanizers in use than of all other kinds together. It consists of a copper pot on to which a brass head is screwed, a steam-tight joint being made by means of a rubber packing in the head, which bears upon the edge of the pot. Its diameter has recently been enlarged from $3\frac{3}{4}$ to 4 inches, and the thickness of copper used in making it has been increased about one-third, thus insuring ample strength. Careful tests are given to each one as it is made, and each is subjected to a pressure of steam far above that which it would receive in use, and is afterwards thoroughly inspected. Our long experience in the manufacture of vulcanizers, the proper proportion of material in its different parts, and the accurate and careful workmanship bestowed upon it, combine to make it a strong, safe, durable and easily-managed machine.

HAYES' PATENT MERCURY BATH is applied to this vulcanizer, by which the bulb of the thermometer is protected from the destructive action of the steam upon it, and one of the most frequent causes of failure of the thermometer entirely obviated. It is also fitted with the B. D. M. Co.'s safety apparatus and safety disc, which will give way and allow the escape of the steam, if the temperature of the vulcanizer should be allowed, by forgetfulness or oversight, to rise to a dangerous extent. The pressure being thus relieved, a disastrous explosion becomes impossible.

The Whitney Vulcanizer is closed by means of two wrenches, the "round" and "straight" wrenches, (Nos. 3 and 8). These form the most convenient means for the purpose, for the traveling dentist. For those having a regularly appointed laboratory, the bed-plate and wrench, (Figs. 9 and 10) are recommended. The bed-plate is fixed to the bench, in which a hole is cut for the reception of the vulcanizer pot. These are furnished with the vulcanizer instead of the round and straight wrenches, Nos. 3 and 8, without any advance in price. If a hole in the bench is not practicable, the Raised Bed-Plate (No. 16) will be furnished at an advance in price of 75 cents.

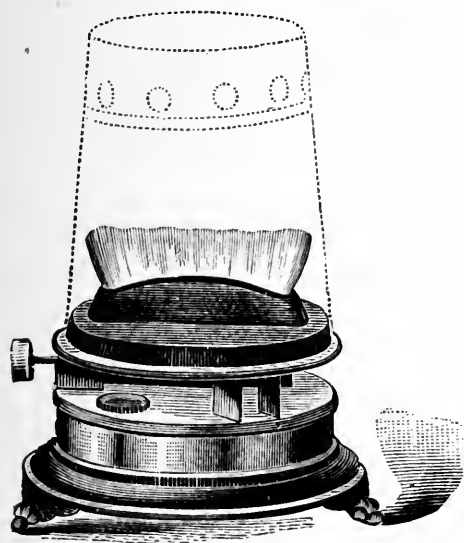
The heat is supplied by either gas, alcohol or kerosene. Apparatus for burning either is furnished as required.

We have succeeded in effecting arrangements with the manufacturers by which we are enabled to furnish a **SPECIAL PATTERN OF KEROSENE STOVE** with our vulcanizers, without the advance in price heretofore made in furnishing the Union Stove. This stove has a four-inch wick and will be found an efficient heater, much preferable to those heretofore used. This stove will always be furnished with this vulcanizer, unless other heating apparatus is specified. The Union Stove, if ordered, will be \$1.25 extra, as before.

PRICES.

No. 1, Vulcanizer, for one flask, Gas, Alcohol or Kerosene,	\$12.00
No. 2, Vulcanizer, for two flasks, Gas, Alcohol or Kerosene,	14.00
No. 3, Vulcanizer, for three flasks, Gas, Alcohol or Kerosene,	16.00
No. 1, Vulcanizer, with Union Kerosene Stove,	13.25
No. 2, Vulcanizer, with Union Kerosene Stove,	15.25
No. 3, Vulcanizer, with Union Kerosene Stove,	17.25

B. D. M. CO.'S
Kerosene Stove
FOR
VULCANIZERS.



A special pattern, with a 4-inch wick. This stove is now furnished with all of our vulcanizers, when ordered "for kerosene," without advance in price.

In ordering, state whether for No. 1, No. 2, or No. 3 Vulcanizer.

PRICE, including jacket, . . . \$1.50

AMALGAMS.

	PER OZ.
Fletcher's Platinum and Gold, . . .	\$4.80
Fletcher's Extra Plastic,	5.00
Blackwood's Amalgam,	4.00
King's Amalgam,	3.00
Buffalo Amalgam,	2.00
Chicago G. & P. Amalgam,	4.00
Oliver's Amalgam,	3.00
Holmes' Amalgam,	4.00
Lawrence's Amalgam,	3.00
Sterling Amalgam,	3.00
Par Excellence Alloy,	3.00
Globe G. & P. Alloy,	3.00

OFFICE PREPARATIONS.

	PER BOTTLE.
Liquid Silex,	\$0.25
Ethereal Varnish, . . . . .	.35
Sandarac Varnish, . . . . .	.25
Wood Creosote, . . . . .	.30
Von Bonhorst's Anæsthetic,	1.50
Listerine,	1.00
Phenol Sodique, . . . . .	.50
Carbolized Resin, . . . . .	.25
Copal Ether Varnish, . . . . .	.25

FLETCHER'S
Glass Mortars & Pestles
FOR
MIXING AMALGAMS.

These mortars are $1\frac{3}{4}$ inches outside diameter, $1\frac{1}{2}$ inches high, ground inside. Pestles for firm holding, $4\frac{1}{2}$ inches long.

PRICE, each, 50 cents.

NOTICE.

PRECIOUS METALS.

The undersigned, manufacturers of gold foils, feel impelled to call attention to the rule requiring cash payment for all precious metals and preparations thereof. The small margin of profit on these goods and the fact that every article entering into their production must be paid for by us in cash before they are offered for sale, render this rule necessary.

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THE DENTAL ADVERTISER.

VOL. XVII.—BUFFALO, N. Y., JULY, 1886.—No. 3.

THE EVOLUTION OF ARTIFICIAL TOOTH CAPS AND CAP-CROWNS AND BRIDGE-WORK.

BY W. STORER HOW, D.D.S., PHILADELPHIA, PA.

Pictorial illustrations of useful things, by means of the engraver's art and photo-lithographic processes, have become the preferred method of presenting to the mind a precise idea of appearances which, however well described in words, could not be so realized in detail as is entirely practicable through the medium of pictorial representation.

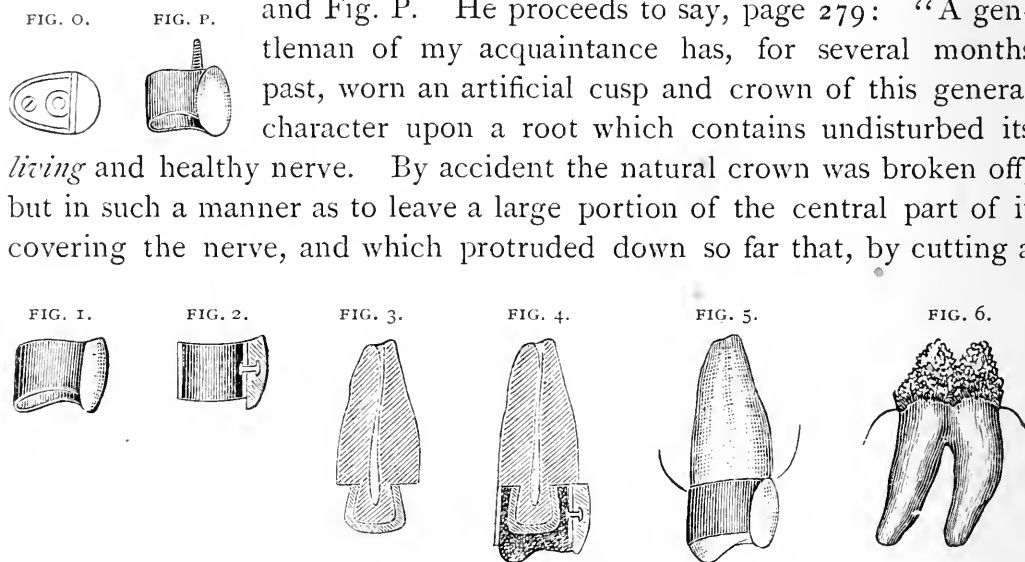
It is an indisputable fact that many useful devices of ancient peoples have been lost sight of by reason of the absence of actual depiction in books or manuscripts which contain allusions to or descriptions of such devices in words that fail to convey definite instructions, or to so fix the reader's attention as to incite an effort for the reproduction of the things described.

Examples of such facts in relation to subjects of interest to the dental profession are here presented, with illustrations of some devices which were so described as to enable those skilled in the art to make and apply them, yet, lacking the attractive effect produced by depiction, the inventions failed to gain general acceptance by the profession.

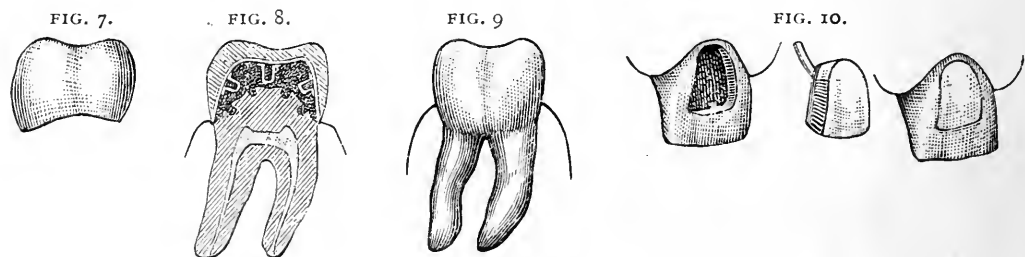
Dr. William H. Dwinelle, in the *American Journal of Dental Science*, April, 1855, pages 278 and 279, illustrates and describes a porcelain-faced ferrule or collar. He previously describes a porcelain-faced *cup* with a perforated bottom, which rests as a floor on the flush end of the root, to

which the floor is secured by headed screws passing through the perforations of the sheet-metal floor into threaded holes in the root. The cup is then filled with crystal gold. The cuts are referred to as Fig. O

and Fig. P. He proceeds to say, page 279: "A gentleman of my acquaintance has, for several months past, worn an artificial cusp and crown of this general character upon a root which contains undisturbed its *living* and healthy nerve. By accident the natural crown was broken off, but in such a manner as to leave a large portion of the central part of it covering the nerve, and which protruded down so far that, by cutting a



groove around its base, it somewhat resembled an inverted cone. Gold was packed around this until it nearly reached the outline of the root, when the prepared cusp and crown" (collar) "Fig. P, without its staple or screws, and which had been previously fitted, was secured to its place. The *tubbing*, or gold-bound cavity, was then filled with gold as described above." Fig. 1 is the same as "Fig. P without its staple or screws." Fig. 2 is a sectional view of such "Fig. P." Fig. 3 is a like sectional view of the described root, groove, "inverted-cone" shaped, "part of it covering the nerve," the gold packing the retaining groove, and "nearly



reaching the outline of the root." Fig. 4. is a like sectional view of the porcelain cusp and "tubbing" "filled with gold" in place on the root. Fig. 5 is a perspective view of the finished collar crown.

Dr. B. Wood, in the *Dental Cosmos*, December, 1862, page 243, presents an article entitled "Enameling Plugs, and Restoring the Contour of Defective Teeth by the Application of Enameled Caps." He says: "The design of the improvement is to restore the form and beauty of decayed and broken teeth, at the same time preserving as much as possible

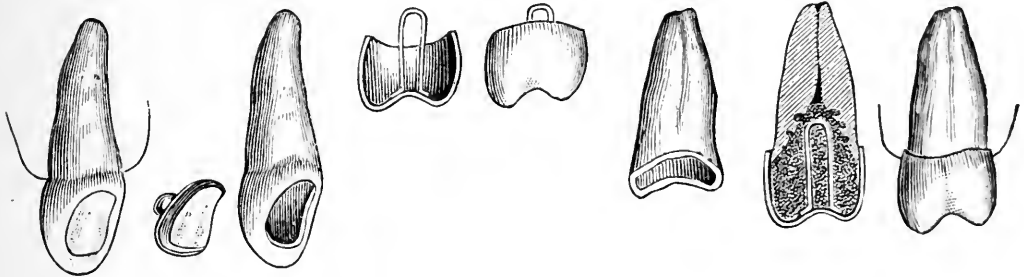
of the healthy dentine, and also to conceal the metallic plugs by means of a cap or covering resembling the sound parts of the teeth. * * These caps are from the size of a medium large plug to that of the entire crown of the tooth. They are made, according to circumstances, with grooves, slots, cavities, orifices, serrations, or with asperities made by means of platina scraps at the base, in order to retain the filling, and are then to be adjusted to the tooth or fragment of tooth properly prepared to receive them. * * In this way entire crowns may be engrafted upon the remains of teeth, back as well as front, and without removing living nerves, as is done in excising and pivoting teeth according to the ordinary plan.

FIG. 11.

FIG. 12.

FIG. 13.

FIG. 14.



* * I have assumed the plastic metallic filling as the material to be used for engrafting the caps to the natural base, but it will occur that any plastic material possessing sufficient tenacity and otherwise suitable would answer the purpose. It will also occur that caps may be formed of thin gold or platina plate, and applied in a similar manner."

Fig. 6 shows a living molar, the enamel of which was imperfectly formed and has disappeared. Fig. 7 shows a porcelain covered platinum cap-crown, provided on its interior surface with soldered platinum scraps to retain the filling. Fig. 8 is a vertical section, and Fig. 9 a perspective of

FIG. 15.

FIG. 16.

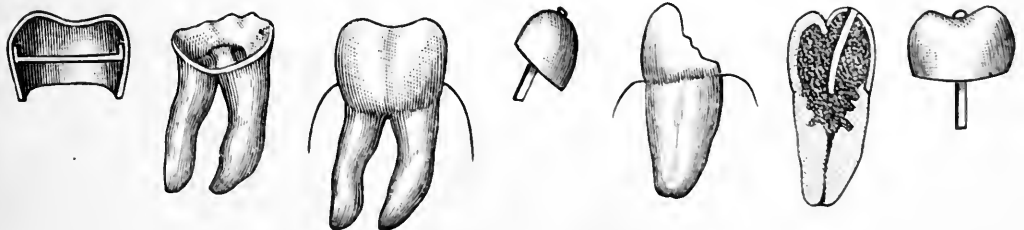
FIG. 17.

FIG. 18.

FIG. 19.

FIG. 20.

FIG. 21.

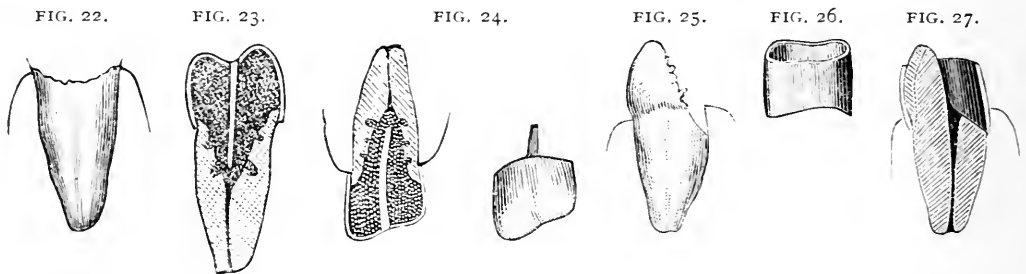


the cap-crowned tooth. All other like denuded teeth of every kind could thus be entirely crowned. Typical instances of similar partial restoration are seen in Figs. 10 and 11. An example of a thin gold cap, likewise mounted on a pulpless root with oxychloride of zinc, is illustrated by Figs. 12, 13 and 14. These instances cover the whole field of porcelain-faced and mere metallic tooth-caps, either entire or partial, and provided

with retaining platinum scraps or other devices to be imbedded in the plastic inclosed by the caps when in place on the prepared teeth or roots, as described by Dr. Wood, who at first intended to patent his invention, but by this publication gave it to the profession.

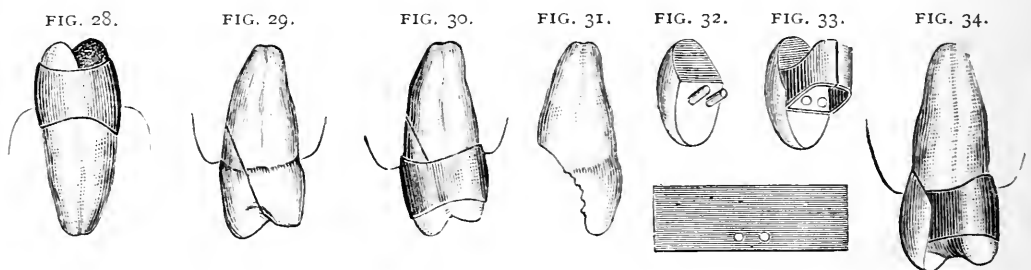
It is probably due to the absence of illustrations that some readers of this journal were able to subsequently make unchallenged claims to these old devices as new.

Dr. Wm. N. Morrison, in the *Missouri Dental Journal*, May, 1869, page 184, describes a gold shell formed on a metal die, shaped like a natural tooth-crown, and having a bar soldered to opposite sides of the



shell, a section of which would appear as seen in Fig. 15. Fig. 16 is like the root described by him, and Fig. 17 resembles the completed crown.

In the *Dental Cosmos* for November, 1876, page 585, Dr. E. A. Bogue is reported as saying: "Dr. Williams, of Boston, sent me two or three little gold toad-stools, in shape, requesting that I exhibit them. I have not got them with me. They are the device of Dr. Fisk, I think, of Massachusetts, who has used them by filling teeth with gutta percha, then warming this gold and pressing it home. The gold is somewhat the shape

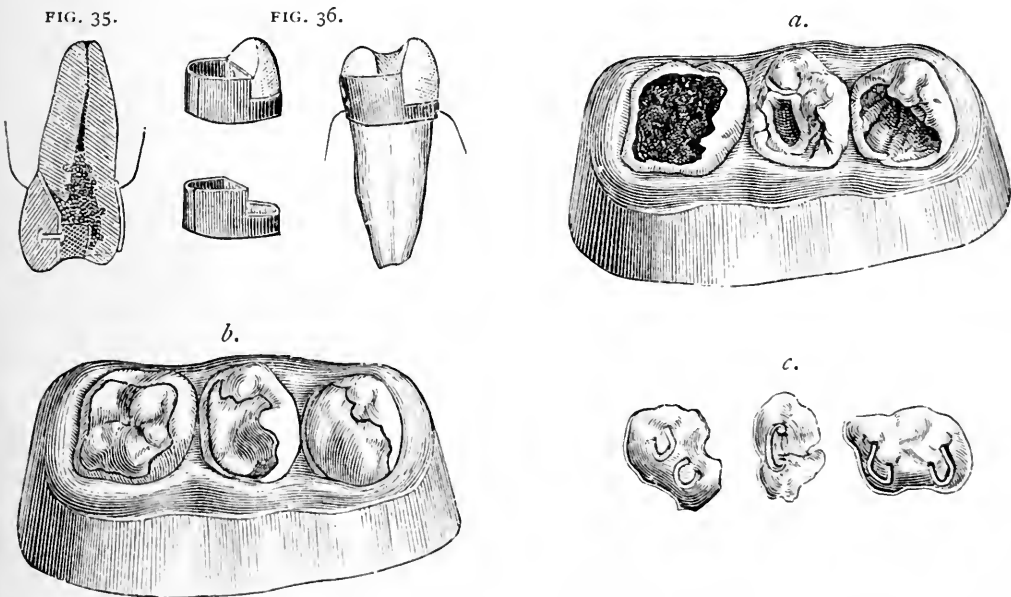


of an umbrella, the tent of the umbrella being shaped as the surface of a large gold filling would be, so that you have a gutta percha filling and the gold cap as a protection to the gutta percha."

Fig. 18 shows one of the "little gold toad-stools, * * somewhat in the shape of an umbrella," and Figs. 19 and 20 show the same mounted on a bicuspid with gutta percha. Fig. 21 shows one shaped as a "large gold filling," and Figs. 22 and 23 show a tooth-root and the pivoted cap mounted on the root with gutta percha as described. Obviously, oxychlo-

ride, or oxyphosphate cement, or amalgam, would likewise serve to fill the cap, surround the pivot, and attach the device to the root in the manner since so well known. (See Fig. 24.)

Dr. C. E. Francis says, page 586: "I am told that fragments of broken teeth have been strapped or bolted together, but how, when, by whom, and with what degree of success, I have not yet learned. My first effort in this direction was to restore a hopeless-looking bicuspid. This was eighteen or nineteen years ago. All that remained of the crown was a mere section, only part of a cusp, connected with the root by a slender line of partly decalcified tooth-structure. After careful preparation, I made a band or ferrule of gold plate, one end of which" (ferrule) "I fitted to the tooth. Then, warming it over the flame of a spirit lamp, I lined the inner surface with Bevin's stopping" (gutta percha) "and slipped it over the cusp securely to the tooth. I immediately packed the

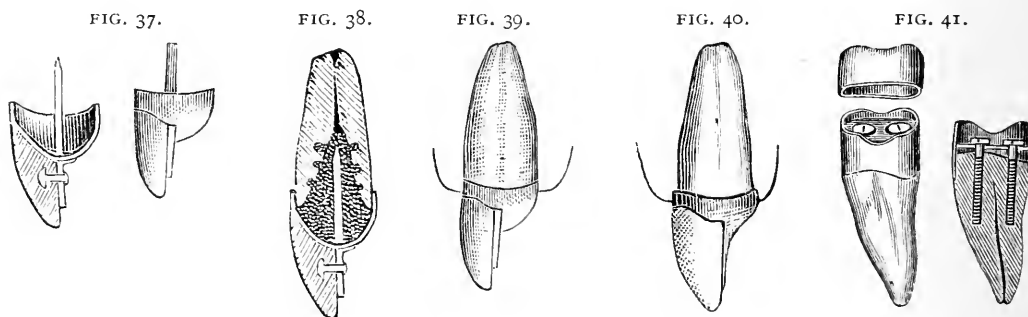


entire space with the stopping, leaving only the extreme point of the cusp visible. * * Since then I have saved a great number of broken teeth in a similar manner, and most of them are doing good service at the present time; have used gold bands and platina bands, and filled them with gold or amalgam, always, however, first packing Bevin's stopping" (gutta percha) "securely against the roots."

Fig. 25 shows such a bicuspid, having only part of a cusp remaining; Fig. 26, the band or ferrule of gold plate; Fig. 27, a section of tooth and ferrule, and Fig. 28, the completed operation. Fig. 29 shows a split bicuspid, and Fig. 30 the same banded. It is thus made evident that gold bands or ferrules or collars were fitted and cemented to teeth and parts of teeth as early as April of 1857 or 1858.

The inventor goes on to say: "Superior bicuspid, when decayed or filled on both approximal surfaces, are very apt to split between the cusps, especially when the cusps are quite long and particularly well defined. * * Within the past three or four years (1872 or '73) I have repaired such cases by attaching a porcelain cusp to the remaining portion of the crown by means of a platina band, in the manner I will describe. Make a cast of the case; select a small-sized, plain plate-tooth (with 'cross-pins' if possible), and grind to fit the cast. Take a strip of platina plate of thickness No. 31, about one-quarter of an inch wide, and of sufficient length. Punch pin holes in the center, and rivet or solder on the tooth. Bring the two ends together around the model and solder. Fit as nicely as possible, and slip the band over the remaining cusp in the mouth. Then fill with oxychloride of zinc. At some subsequent sitting remove a portion of the oxychloride of zinc, and cap with gold or any other stopping. Lastly, burnish the edges of the band close to the enamel."

Fig. 31 shows a bicuspid split between the cusps; Fig. 32, a porcelain "plain plate tooth with cross-pins," and Fig. 33, the same cuspid pro-



vided with the band soldered to it, and nicely fitted to the remaining part of the natural tooth. Fig. 34 shows the banded porcelain cusp in place on the tooth, and Fig. 35 is a vertical section of the same to show the attaching cement and gold filling of the completed operation. Fig. 36 represents an obvious modification.

In the foregoing figures there have been illustrated such cases as were immediately described, but the language used is broadly inclusive of every form of metallic shell crowns or caps, or sections of such shell crowns or caps, provided with retaining devices of any degree of perforation, excision or projection, as a means of "engrafting the caps" to "teeth or fragments of teeth prepared to receive them."

A partial or complete porcelain facing of such partial or complete metallic substitutes for lost portions of the natural teeth, or for entirely removed crowns of such teeth, was likewise embraced in the description of Dr. Wood.

In the *Dental Cosmos* for June, 1877, in a report of the March meeting of the Pennsylvania Association of Dental Surgeons, Dr. Essig, of Philadelphia, illustrates his improvement on a method credited to Dr. Bing, of Paris. On page 315, he says: "The case illustrated *a* was now restored in wax as in *b*; when, as stated, an impression would be taken, plaster model made, and die and counter-die obtained. A gold cap could now be swaged, and loops soldered to it as represented in *c*. The body of this gold cap is filled with softened Hill's stopping, as well as the remains of the tooth. The cap is placed in position, and with a heated instrument the temperature conveyed through the gold cap to the gutta percha in both the tooth and cap. The jaws may now be closed while the gutta percha is soft, and when cooled the excess of Hill's stopping removed, and the edges of the gold burnished down to the tooth."

This is an obvious modification of Dr. Wood's device, made clear by the illustrations; and equally obvious modifications might well be derived from the preceding figures and descriptions.

FIG. V.

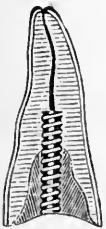


FIG. 42.

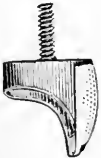
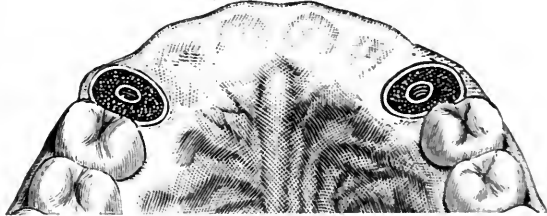


FIG. 43.



FIG. 44.



For example, Fig. 32, backed with platinum or gold plate as usual, and soldered to a "little toad-stool," Fig. 18, would appear like Fig. 37, and could similarly be mounted on a root, with the result seen in the sectional view, Fig. 38, and in the perspective view, Fig. 39. In the old and well-known method of soldering a plate tooth (Fig. 32) to a root-plate and post, it is usual to contour the backing with solder, and therefore a like contouring would be done by any dentist in the process of mounting such a plate tooth on a "toad-stool," as is illustrated by Fig 40.

Dr. E. S. Talbot, in the *Dental Cosmos* for September, 1880, on page 465, describes and illustrates his telescoping cap-crown that fits over a collar in which is soldered a diaphragm perforated for the passage of headed-screw pivots to enter the root through the inclosed cement. This is a combined cap-crown and cup-crown, Fig. 41.

The dental profession is therefore indebted to the original and first inventors of the devices which may be summarized as follows:

1st. A thin metallic shell-section, having the external configuration of the absent part of the defective natural tooth to be restored, and having

on its inner surface retaining devices which engage with the plastic "material to be used for engrafting the caps to the natural base."—*Dr. B. Wood, 1862.*

2d. Such a metallic shell-section faced with porcelain, colored to resemble a natural tooth.—*Dr. B. Wood, 1862.*

3d. A metallic ferrule or collar surrounding a tooth-neck at or under the gum-margin, and inclosing a fractured tooth-crown or fragment of such crown, and also inclosing a plastic material which serves to retain the ferrule or collar on the natural tooth-neck, and furthermore replaces the absent portions of the natural tooth-crown.—*Dr. C. E. Francis, 1857.*

4th. A thin metallic ferrule or collar soldered to the platinum pins of a porcelain imitation of a natural tooth-front, and secured upon a defective natural tooth by a filling material occupying conjointly the ferrule and the parts of the tooth surrounded by the ferrule.—*Dr. W. H. Dwinelle, 1855.*

5th. A thin metallic ferrule or collar soldered to the platinum pins of a porcelain imitation of a natural tooth-crown front, and secured upon a defective natural tooth by a plastic material occupying conjointly the cavity of the tooth and the cavity of the investing ferrule or collar.—*Dr. C. E. Francis, 1872.*

FIG. 45.

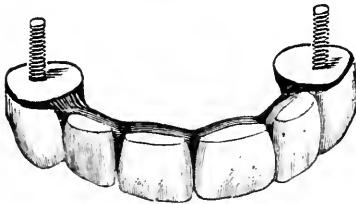
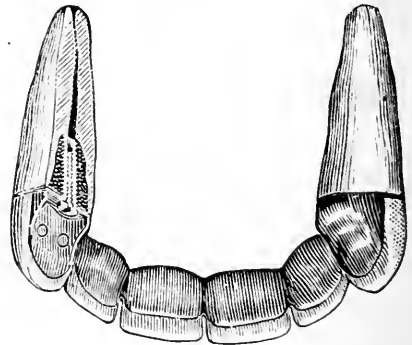


FIG. 46.



6th. A thin metallic shell-section having the external configuration of the defective natural tooth which is to be restored, and provided with a stem, pivot, pin or post firmly attached to and projecting from the inner surface of the shell, which stem or pivot affords additional security to the engrafting of the shell upon the tooth by means of the inclosed plastic material which also surrounds the stem, pivot or post.—*Dr. Fisk, 1876.*

It can not be termed invention to merely magnify the "platina scraps" of Dr. Wood into the stems, pivots, pins or posts of Dr. Fisk; but the descriptive terms "toad-stool" and "umbrella" justify the depictions which emphasize the fact that Dr. Wood actually anticipated some very modern devices claimed as inventions.

7th. A thin metallic ferrule or collar surrounding a tooth-root, at or under the gum-margin, and provided with an integral metallic diaphragm secured to the root by screws, combined with a thin metallic shell which telescopes over the collar, and, like the collar, incloses retaining plastic material.—*Dr. E. S. Talbot, 1880.*

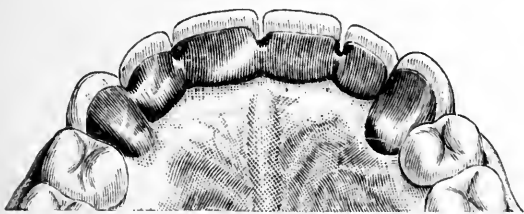
8th. A thin metallic ferrule or collar surrounding a tooth-root, at or under the gum-margin, and provided with an integral metallic diaphragm to cover the end of the tooth-root, and in connection with the neck-flange of the collar, to inclose with the root end a suitable cement for fixing the collar hermetically tight upon the root.—*Dr. E. S. Talbot, 1880.*

In all the cases and instances hitherto described, the plastic material, in addition to its properties of substitution and retention, also serves to exclude food and fluids, and hermetically seal the metallic structures upon their natural bases.

Fig. V. reproduces Dr. Dwinelle's cut showing in section a threaded tube fixed in a root by filling material. Fig. 42 is a cup-crown like Fig. P, and Fig. 43 is the same secured by its headed screw on a tube-root like Fig. V, in the manner described by Dr. Dwinelle, who furthermore says, pages 281, 282: "After the root is filled with gold as above described and properly finished, an impression is taken of its surface, in wax, from which

castings are made, and from these plates are swaged. These are adjusted to the roots, and a golden pivot is soldered to each of their upper surfaces. A plate tooth is now skilfully adapted to the fixture, when it is ready for use.

FIG. 47.



In this manner a plate may be extended across an intervening space, and an unbroken row of teeth mounted upon it."

Fig. 44 shows the model of a mouth from which the superior centrals and laterals had been extracted. The roots of the cuspids are represented as screw-tubed, filled flush and finished as directed by Dr. Dwinelle, and shown in his Fig. V. Cup-crowns like his Fig. P, cut away as seen in Fig. 42, are then fitted to the cuspid root-ends. A bridge across the intervening space, and an unbroken row of teeth mounted upon it, is shown detached in Fig. 45, and in position on the exposed roots in Fig. 46; the left cuspid root and its crown appearing in section to exhibit the screw attachment, while the right cuspid root and crown are shown as they might be seen after packing the crystal gold into the cup, and giving all the gold work a smooth, rounded finish.

Fig. 47 shows the completed cup-crown bridge made as described by Dr. Dwinelle more than thirty years ago.—*The Dental Cosmos.*

BRIDGE WORK.

BY JAMES E. LOW, D.D.S., CHICAGO, ILLS.

Read before the Mississippi Valley Dental Society.

The question, how can the partial loss of teeth be restored with the least possible injury and inconvenience to the wearer, is of so much importance that there is but one question greater to the conscientious dentist and patient, that of preserving the natural teeth; thereby avoiding the necessity of interfering with the natural condition. For thousands of years the importance of these organs, not only to masticate our food properly, but to keep in harmony and preserve a symmetrical appearance of the combined features of the face has been recognized. In the early history of mankind the bones of animals were carved in the shape of teeth and worn. Holes were drilled on either side of the denture and tied to the teeth adjoining with ligatures. These crude dentures, with all their imperfection, were considered ornamental to persons without teeth, although of but little use, if any, for mastication.

Notwithstanding their crudeness, and the fact that the acids of the mouth penetrated the bones so carved and made them offensive, the balance was drawn in their favor, and the higher classes wore them. This seems to have been almost the first manner of restoring the partial loss of teeth. Where roots remained, transplanting was practiced among a certain class able to pay some poor person for losing theirs.

This, in most cases, proved unsatisfactory, like nearly all previous attempts to restore partial loss of teeth, and I might add, nearly all of the present. Some time later, natural teeth—those lost by disease of the gums and those of dead people—were used to supply vacancies, by first making a plate to fit the vacancy to be supplied. Clasps were soldered to this narrow plate, which rested on the gum, to hold the denture in position by clasping the teeth adjoining those to be supplied. Pins were soldered to these narrow plates for each tooth to be supplied; holes were drilled longitudinally into the pulp cavity in the teeth; the teeth were then slipped over the pins and riveted fast on the lingual side.

Thus the toothless sufferer struggled along from the use of white wax crowded between the teeth, and blocks carved from bones attached with strings and wires twisted around the natural teeth, with screws inserted into the natural root to hold them in position and natural teeth fastened to clasps as stated, until the porcelain tooth was invented.

This obviated one of the principal objections, it being incorruptible, and not affected by the acids of the mouth. But the objectionable clasp attachment still remained, causing much trouble and annoyance by their

constant motion on the teeth clasped, which in many instances soon became sensitive, and often loosened.

The next supposed advance was to abandon the clasp attachment, and cover the roof of the mouth, holding the denture in place by atmospheric pressure. The clasps were supposed to be more objectionable than the discomfort and inconvenience of wearing the plate over the roof of the mouth; but time and experience have thoroughly proven that more harm has resulted from their use than the clasp plate, as they not only injure the natural teeth by their constant motion, but most plates of this class are fitted close around the necks of the teeth, and cause recession of the gums by the inflammation produced; not only this, but thousands of persons wearing these plates covering the roof of the mouth were soon found to be suffering from inflammation and thickening of the mucus membrane, red and inflamed spots appearing there, and often, where there was a lagging of vitality, either from blood poison or otherwise, these plates set up inflammatory action, which many times caused the loss of the palate, vomer and nasal bones. Then again, in order to digest certain kinds of food, in fact all of the carbo-hydrates, such as starch, sugar, oil, gelatine, gum and flesh, the combined secretions of the follicles and salivary glands are needed, and these could not be had where the roof of the mouth was covered. Consequently if we are not able to digest these as nature designed, the injury liable to occur, physically and mentally, is incalculable.

Now, by a careful analysis of the fluids of the mouth, the salivary gland excretion will be found alkaline, and that of the mucus membrane, acid. Who doubts that these numerous follicle glands were for an all-wise purpose? We cannot close our eyes against these facts if we have any regard for humanity at large. We all know that inflamed mucus membrane does not excrete normal secretion, and that nine-tenths of all persons wearing the roof of the mouth covered have inflamed mucus membrane. Consequently the natural conditions of the mouth, and of digestion, are interfered with, and, as stated before, the question of how to restore the teeth and not interfere with the natural condition has baffled the skill and ingenuity of the dentists familiar with these facts. Wishing to do their patients no injury, if they can do them no good, they have refused to extract teeth firm in the jaw, and set their wits at work to restore these diseased teeth instead of extracting them, knowing that they could never replace them.

Being familiar with these facts for many years, my efforts have been directed towards preserving the natural teeth and restoring what loss there might be without covering the roof of the mouth. My experience has convinced me that, as a rule, a tooth firm in the jaw need not be extracted. There are but few exceptions. When the treatment is followed persistently, and proper judgment used, nearly all the partial loss of the teeth

can be restored without covering the roof of the mouth, and made as valuable for masticating food as the natural teeth, I am positive, and with less injury to the remaining teeth than by any other method. The method referred to is that known as the "Low Method," or Bridge Work.

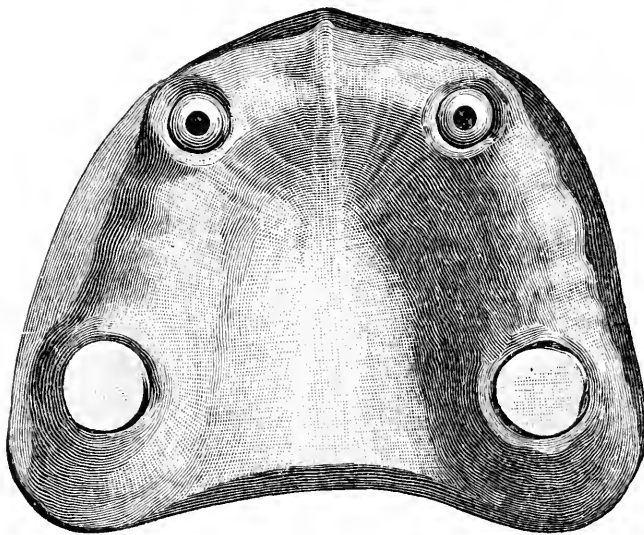
Bridge work consists in supplying vacancies between teeth or roots with artificial teeth, attached to the adjoining natural teeth or roots by means of bands or crowns, and held in such position that there is no contact with or pressure on the gums beneath, and thus no opportunity for secretion or other foreign matter to be held there and thereby become offensive.

There is really but one kind of bridge work, and but one way to make bridge work to insure success. There are many ways of making teeth without plate, but this is not bridge work. I will here try to explain in

detail my manner of making and adjusting bridge work.

For the first illustration, as seen in cut No. 1, we have a case where all the teeth have been extracted, except the two cuspids and two second molar roots.

We first proceed to prepare the roots by crowning. I use gold crowns on the molar teeth, and what is known as the Low Crown on the two cuspids.



NO. 1.

The preparation of the two cuspids consists in making the crown ready for adjustment. I always measure the tooth to be crowned with gold with a strip of block tin, 35 thick stub gauge or thereabouts. Place the tin around the tooth, and with plyers carefully measure the full size of the same.

Should you be measuring a tooth, or part of a tooth, on which there are projections, take the engine, and with a stone grind off the same, making a smooth surface, so there will be nothing to interfere with the fitting of the bands properly. After cutting the tin measures by the marks made by the plyers, you have the measures ready to make the gold bands by. Cut the bands and bevel the edges and solder together, and you are ready to fit. After fitting all the bands and finishing the crowns in the usual way, I place each in position in the mouth, having previously regulated the articulation of each crown as desired, in the process of making. We now take a deep articulation in wax, and impression in plaster paris; remove before it gets too hard, and place all the crowns in their positions

in the impression; varnish, oil and pour in the usual way; separate the cast from the impression, and place in the articulator. Then pour plaster. After the plaster has hardened, remove the wax and we have the articulation proper, and are ready to select and grind our teeth, having previously selected our shade. My experience has long ago taught me that no porcelain tooth can stand the pressure for bridge work. The strain on them being twice as great as with teeth on plates, which rest on the gums that give to pressure. In order to prevent breakage of teeth and give strength, I have for many years been making a tooth with gold cusps. I will here describe my manner of doing so. I had some shells of bicuspid and molars made, or rather, teeth without the crown. They can now be found in some of the depots.

For the first step, I use 28 gauge platinum for a covering of the inside of the shell, or just where you wish gold to flow. Then I bend the pins down to hold the platinum in position, and with a file remove all overlapping platinum, to prevent breaking of our tooth in heating. The tooth is made flat on the crown surface with the express intention of restoring with a gold crown. This crown need not be very thick, but should perfectly resemble the cusps on the natural tooth, for the purpose of mastication. As these cusps are not on the market, and every dentist making bridge work can not make it in a way to stand, without putting gold cusps on the grinding surface of the bicuspid and molars, I will here describe, for the benefit of those who do not know how to make them, how they can be made with very little trouble. Pick out a natural tooth with cusps the exact shape you wish to have your gold cusps, mix some fire-clay in a thick paste, then press your tooth into it a little deeper than you wish the cusps. Having made the proper impression, remove the tooth, and set the impression over the gas stove to dry. After it is dried and reasonably hot, lay your pieces of gold in the impression and, with a blow-pipe, melt them. When melted, press with a piece of steel on the gold till cool. This mould will do to make many from. If you have not the fire clay, and can get charcoal that is burned from fine-grained wood and is soft, you can simply press your tooth into the charcoal and melt in the same way, or you can carve your teeth as you desire in a block of carbon. Of course, the little steel dies are handier, as we can swedge up our gold cusps in them, either solid or thin.

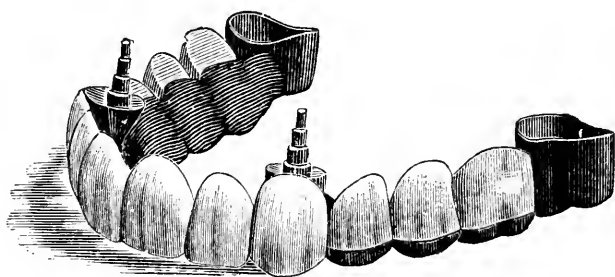
Having described our manner of making the cusps, we will now return to the manner of finishing our tooth. We left off by saying we covered the inside and bent down the pins and filed off the overlapping platinum. We now place the cusp on the top of the tooth, and place in the position desired, holding it there with wax, and with a spatula trim the wax the exact shape we wish our tooth to be—V-shaped, tapering from the crown down. We now encase in plaster and sand, which gives us a box. When

hard remove the wax and place over the stove, and when sufficiently dry fill in with coin gold, using the blow-pipe to melt it in a solid mass, and then our tooth is ready to file up and place in position on the articulator. Cut No. 2 shows the tooth in this condition.



NO. 2.

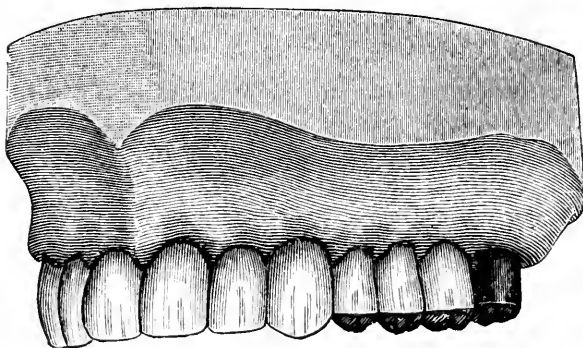
After our teeth are all arranged, we hold the same in position with wax, remove from the articulator, encase with plaster and sand or asbestos in the usual way. That we may have a strong case, I always use platinum wire between each tooth, and then proceed to heat and solder. Be sure that all the gold cusps are so arranged that you can get all soldered together, as this gives us great strength. My formula for solder, which I have used for many years, and which will be found very easy flowing and almost the exact color of the gold you are using, is as follows: Always figure from the karat of gold you are working. Take one dwt. coin gold, 2 grains of copper and 4 of silver. We now have our case soldered. After filing as desired, commence to finish with felt wheels and pumice stone, after which we use rough buff wheels. We are now ready to adjust in the mouth. In cut No. 3 we see the case ready for adjustment.



NO. 3.

Have the assistant dry all the teeth or roots to be operated upon while you are mixing the cement. Be sure and use a kind which does not harden very rapidly or your cement will set before you get your teeth adjusted. Use sufficient cement to fill all the gold crowns perfectly when the case is driven to place. Moisten the step plugs and cap with cement, touching every portion, and with an instrument place a little cement in the bottom of the cavity. We now adjust our case, using the little rotor for the low

crowns and a piece of ivory for driving on the gold crowns. Cut No. 4 represents the case when in position.



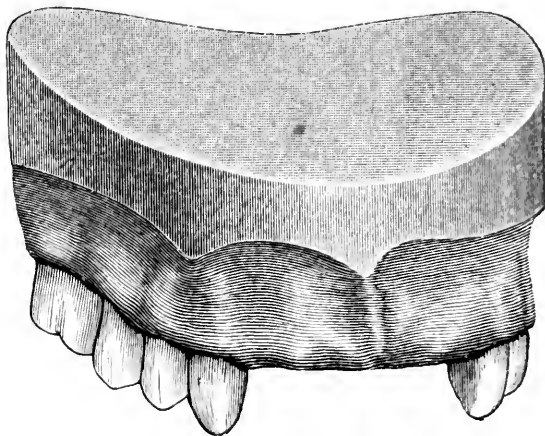
NO. 4.

It will be seen by looking at the previous cut No. 3 that the teeth after having been soldered are all spaced fully one-third of the distance from the place of contact with the gums and the grinding surface of the teeth, so that secretions could not possibly lodge there. I have given you a description of my manner of making a full upper case of bridge work, where there are roots to be

crowned to support the bridge. I will now describe my manner of operating upon a case where the four centrals are missing, as seen in cut No. 5. To supply these four teeth where the cuspids are intact, I use a gold band.

I first measure the tooth with strips of tin, and make the gold bands, as before described; cut out the inside lower portion of the band before beginning to fit. In fitting, as the band is being driven down, cut away any of the band that touches the gum before all touches. Never drive the band under the gum, as inflammation would probably follow.

I mention this as I have seen many attempts to get rid of the band by driving up under the gums and cutting them out on the front, until they were too narrow for strength. It is hard work to make something out of nothing. The bands should be heavy and strong, and the patient made to understand that if he expects to get rid of the annoyance of the plate he must sacrifice his dislike to showing gold. After driving the bands up close to the margin



NO. 5.

of the gums, as the cuspid teeth are very tapering, the bands will have to be taken in at the bottom. To do this, I slit the band about a third of its length up, then place it on the tooth again, lap it over enough and bring it to a close fit, and then take it off and solder.

Continue taking it in wherever it does not perfectly fit the tooth, and after a good fit is obtained proceed as before described by taking an articulation and impression. In adjusting, first try the case on to see that it fits and that the articulation is all right. Cut No. 6 shows the case ready for adjustment.

Next, have the assistant dry the teeth upon which the bands are going, and then mix your cement. This should be mixed to about the consistency of thick cream. It must be neither too thick nor too thin, or the adhesion will not be strong enough to hold. Cover your teeth with cement and then the inside of the bands. Place these on the teeth and carefully mallet up into position. For this purpose I use a steel instrument with a crease or groove in the end. The teeth must be kept dry after the case is in position until the cement is well set. After this is done, bevel the edges of the bands and burnish close to the teeth, and if properly done they will be made to resemble gold fillings.



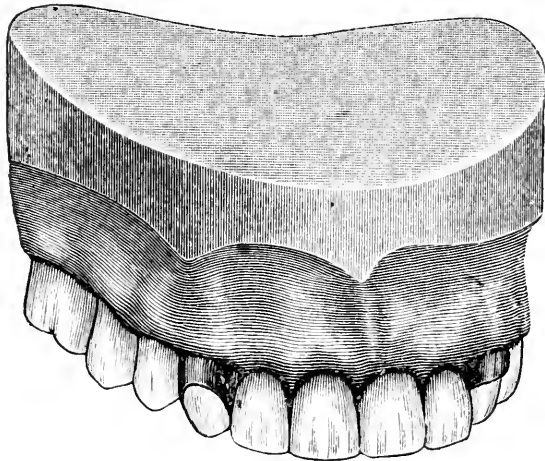
NO. 6.

In cut No. 7 we have the case completed.

I am aware that in a case like this, porcelain crowns instead of gold

bands could be used, and I should consider it much preferable to do so where we have roots or unsound teeth to operate upon, but do not advise the destroying of nerves where the teeth are intact to supply such a case with crowns, as the bands will answer every purpose for many years.

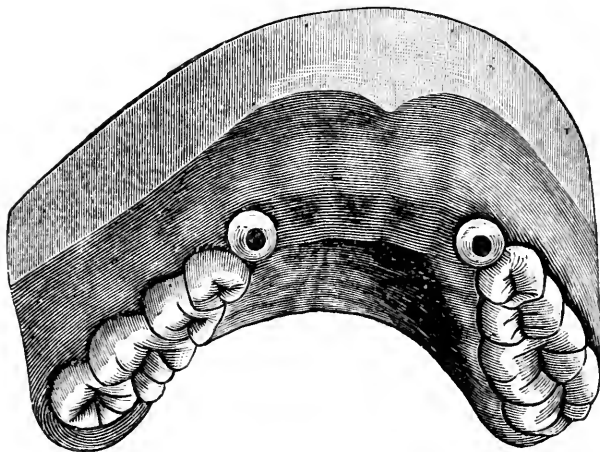
If they should give out in after years the roots can then be crowned. I have many of these cases that have been in use seven and eight years,



NO. 7.

some of which have never loosened, and some I have re-set nearly every year. I always impress upon the patient the necessity of having them re-set immediately should they become loose, and advise them to have their cases examined at least once a year. Should parties insist upon having crowns used to supply a case like the one just described on perfectly sound teeth, I should begin by using an

aluminum disc, with corundum, cutting deep as possible, both on the labial and lingual sides. Then use the excising forceps. This can be done under the influence of an anæsthetic or otherwise. It is not by any means so painful an operation as one would think. If the nerve does not come out with the piece of tooth cut off, I take a piece of orange wood which I have previously cut the proper shape to drive into the nerve canal.



NO. 8.

I place it in creosote and let it soak a few minutes before beginning to operate. Immediately after severing the tooth drive this into the canal, then remove and dip in creosote and drive in again. This will perfectly fill the nerve canal, all sensitiveness will disappear, and you can begin to operate at once. I do not recommend this treatment for sound teeth, but I have treated

many exposed nerves in this way, also many teeth broken by accident, and think this the most satisfactory way to dispose of such cases. I have never had any unfavorable results follow after operating upon teeth in this way, and I can hardly say as much in favor of any other treatment. I speak of this manner of treating exposed nerves as one of the operations

that sometimes becomes necessary in adjusting a bridge properly. I do not claim any originality in this mode of treatment. I know several dentists who use this method, all of whom report satisfactory results. We now have cut No. 8 showing the roots prepared to receive the case.

I have many of these cases in use that are giving entire satisfaction. The instrument selected for preparing these roots should be one with small inside cutters and large bevelers, so as not to cut away any more tooth substance than possible.

Cut No. 9 represents the case ready for adjustment.

Cut No. 10 represents the case after adjustment.

In this article I have described my manner of making teeth for bridge work. I am now having made a tooth expressly for bridge work, which I hope to be able to place on the market soon. I have been using them, but have not perfected my shells and moulds sufficiently to enable me to get them out in large quantities.

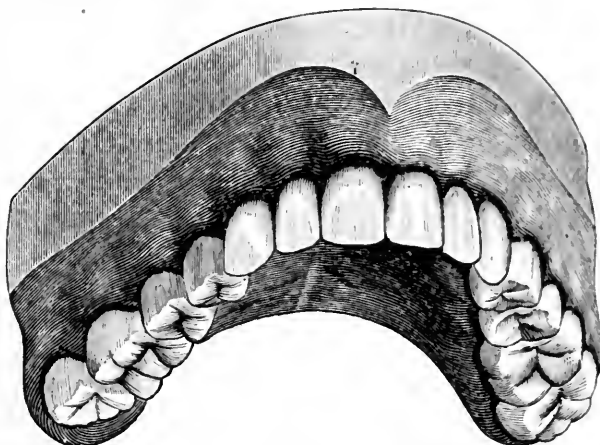
Cut No. 11 shows us a socket. These I propose to have ready made in various sizes in bicuspid and molars with corresponding shells.

Cuts 12 and 13 represent the shells placed in sockets. Number 12 is a molar tooth showing the shell in position, and 13 is a central reversed.

Cut No. 14 represents the socket as made for the four central and two cuspid teeth. The advantage of these teeth can readily be seen, not only



NO. 9.



NO. 10.



NO. 11.



NO. 12.



NO. 13.



NO. 14.



NO. 15.

for bridge work but all gold plates. A tooth if broken can readily be replaced without removing the bridge or cracking by soldering, and with only a small expense.

Cut No. 15 represents the shell placed in position in the socket which can be used for bridge or crown work, and will greatly reduce the labor in making either.—*The Dental Register*.

DENTAL HABITS.

BY E. H. RAFFENSPERGER, D. D. S., MARION, OHIO.

In reading the dental literature of the present day, I find that most of the articles seem to relate to the new theories, methods and ideas of the writers; often, indeed, "hot pebbles," if such they may be called, but all relating to the *practice* of dentistry.

I have often wondered why some one did not write something relating to the dentist and his habits; or, rather, a dental "*Don't*." There are a great many little things that some of us never think of which go far towards the success of a dentist, not merely in his work. I write more particularly of his habits. Our profession is one that requires the utmost fastidiousness on the part of our patients; but too many of us forget this, especially the "country dentists." Now, I do wish more of my country brothers could visit and notice the workings of a well regulated city dental office. And how some of the city brothers would be shocked to visit some of their rural brethren! Yes, they would be utterly disgusted to find a dentist working (say for a lady) in his shirt sleeves, often with his vest off, smelling strongly of tobacco, hands dirty, office generally filthy, and at the same time hear him "*blowing*" about how many teeth he could pull in a minute, and all that sort of thing. This is what is going on now in many of our country dental offices, and the dentists seem to see nothing at all out of the way. This is just the point I wish to get at. A dentist should strive to avoid all those habits that are objectionable to his patients. The idea of working for a fair patient in one's shirt sleeves is disgusting. No gentleman has a right to appear in the presence of a lady when he is thus attired, or rather *unattired*. I have seen some who even removed the vest. How much neater and more attractive a clean, white, thin coat would look! It would certainly be just as comfortable. Our profession is not one of hard labor. A laboring man has some excuse for removing the coat, but a dentist—none. It is simply *rude*. The mere act of removing the coat tends to intimidate any nervous person, who imagines something dreadful is going to be done. Certainly it is not very professional for a dentist to appear on the street with his coat off; but how many do this very thing—yes, with a cigar in the mouth, at that! Tobacco ought to be the bane of dentists, but it never will. If we must indulge, let it be after office hours. To many ladies the smell of tobacco is sickening. Well do I remember (to my sorrow) a case I lost, because the patient noticed the odor of tobacco about me.

Keeping the hands clean is another "point" some forget. I have seen dentists take the hands from one patient's mouth and put them in the mouth of another without washing. This is disgusting, to say the least. I have seen the same performance with a napkin. Water is cheap, and we ought not to be afraid of it. It cannot hurt us, no matter how much we use; only keep clean, not only in person, but in our office. It is a small matter, but it may bring us in many extra dollars, if we keep an attractive office. Only a few days ago a lady paid me a compliment, by saying my "office did not look like an office; more like a parlor." This is what we all should wish. Make the office look as little like an office as possible; keep all dental appliances out of sight. Many a timid patient has been frightened out of a dental office by merely seeing instruments, etc., lying about. Have plenty of bric-a-brac around to attract the patient's mind, as far as possible, from the operation. Cheerful reading matter, pictures, flowers, etc., all have a pleasing effect in that direction. Sometimes we find the cuspadore stained with blood: keep it clean by all means. Do the same in regard to the instruments. Let us remember that "cleanliness is next to godliness" in our profession.

In conclusion I would like to say something about our talk and conversation. Dentistry has often been called a "*trade*." It is, if we make it so. One of the worst "*giveaways*" (if I may use slang) of the dental profession, is to hear a dentist talking without regard to grammar, or even good sense. What a pity every young man who enters a dental college cannot be compelled to show a diploma from some school or college, and give some evidence that he will not be a drawback to the profession by being a blockhead and ignoramus. Dentistry would certainly take a rise. We can talk at least professionally, if not grammatically. We can use dental terms and expressions. I know of one dentist who always speaks of an impression of the mouth, as the "*measure*" of the mouth. If we wish to make any impression whatever upon our patients, we must do so by our conversation. Bragging will not make up for any attainments we lack. It is better to confess a fault than try to smooth it over by "*blowing*," and trying to convey the idea that we really are of some account. I hope the new dental law will pass, so some of the quacks and "blow-hards" who now call themselves dentists, may be weeded out, and that the time may come when the dentist will be known by his elegant and refined manners, and the dental office may lose many of its present disgusting features, and become one of the most delightful places a person can find, so that the city dentists will not be shocked, when they call upon their country brethren, at anything they may witness. All this can be easily brought about, if we attend to these little, seemingly insignificant points.—*Ohio State Journal of Dental Science*.

EXSECTION OF DENTAL NERVE—TWO CASES.

REPORTED TO THE GEORGIA DENTAL SOCIETY, MAY 11, 1886,

BY B. H. CATCHING, D. D. S.

Case First.—Dr. H., druggist by occupation, age about thirty-six years. Two years or more ago he felt the first pain in the left side of inferior maxillary, located about the molar teeth. After bearing frequently-recurring paroxysms, he consulted a dentist, who extracted one of the molars; only very temporary relief was obtained. After a short time another molar was removed, without relief.

More than a year ago, and after twelve months of constant suffering, he called on me for advice. After a thorough examination, no abnormal condition was found either in bone or soft tissues. The remaining molar had an amalgam filling in the posterior approximal surface, which I removed, thinking probably to find a diseased pulp; the dentine was sensitive, the tooth responding to thermal changes. The cavity was re-filled with gutta percha; no improvement was made. I advised the removal of the tooth, as a means towards relief. To this he would not consent, his experience with extraction not having been satisfactory. I diagnosed the case to be pressure on the dental nerve, and informed him that in all probability an exsection would have to be performed before he got permanent relief. To this he grunted in dismay, and concluded he would endure awhile longer what he could not cure with the aid of a whole drug store and the advice of good physicians.

I wrote to Dr. Garretson, giving him a history of the case, and, as is usual with him, he replied promptly, stating that from my statements my diagnosis was correct, and that an operation would have to be performed.

Finally, after about twelve more months of severe paroxysms, growing more frequent and severe, which would be brought on by simply opening the mouth to speak, a stroke on the beard, or taking a morsel of food; and after exhausting his drug store and physician's resources, he came up to have a final examination, bringing his physician.

I insisted again on removing the tooth, and if no relief was obtained to have the severer operation performed. They left my office, to call again. In the meantime he visited his physician's dentist, who advised the removal of the tooth, and, in attempting to extract it, broke it off even with the alveolar process.

An appointment was made with me for the next evening, at which time I proceeded to operate, with Dr. Olmstead as anæsthetist. With a scalpel the process around the running roots was made bare of the gum tissues. With cutting forceps I removed piece at a time of the bone and roots,

finally cutting down on the dental nerve and removing a section of about half an inch. The roots of the tooth were in such a pipe-stem state that every effort to extract them whole proved a failure. Hemorrhage was very profuse, which delayed the operation very much. Not anticipating so extensive an operation at this time I did not prepare instruments entirely suitable for exsection. In fact, I began the operation as alveolar tooth extraction, and wound up with nerve exsection. Had I expected to perform the exsection at this time I would not have used the dental chair or office, but would have had the patient at his home, on a lounge.

About one hour after the operation, vomiting of the swallowed blood began, which so irritated the stomach that for two days only crushed ice could be tolerated. After about six days the patient was out, and to this day has not had a recurrence of the pain.

Case Second.—Barbara Snyder, colored; age about 55 years; of stout build; a cook by occupation.

About October, 1884, she felt the first twinges of pain in the right side of her face, which, as she expressed it, “seemed to spread out like a thousand threads.” For several months there was no definite location of pain; it spread over the entire side of the face and scalp. After that time its local point was about the canine fossa, where it remained up to the time of the operation.

The paroxysms would recur every few minutes, with an occasional respite of a few hours. Simply passing the hand over the face or hair, or a cloth applied to bathe the face, would cause paroxysms. After seventeen months of suffering, the latter five very intense, and after exhausting the skill of a dozen physicians and every suggested remedy without relief, I was called. I found the old woman hovering over a fire with a shawl around her head, swaying from side to side, tears pouring down her cheeks, hope of relief gone and wishing for death.

An examination showed her upper teeth gone, and only a few lower ones remaining; had been extracted seeking relief. No lesion could be found. In fact, everything presented a remarkably healthy condition.

Exsection was determined on, and the patient made acquainted with its character and probable results. She caught at it as a last means of obtaining relief. On the second day following the patient was placed on a lounge (a most convenient arrangement for position), and chloroform administered to complete anæsthesia by K. C. Divine, M. D. With R. Y. Henley, D. D, S., to man my Bonwill engine, the operation proceeded as follows:

The gum on top of the ridge from the position of the lateral incisor to that of the second bicuspid was removed; the bone on either side from same points was made bare; with a circular saw a tranverse section at both terminal points was made; the lateral flaps were held back, and the

saw was passed on the labial and palatine sides, cutting from one transverse section to the other. With a pair of bone-cutting forceps a perfect section was removed; then, with a large bur, the bone overlying the nerve was removed, and the nerve cut away.

While hemorrhage was quite severe, very little blood was swallowed. The situation of the operation, and the position of the patient, afforded an easy direction of the blood out of the mouth. The wound was dressed with cotton saturated with carbolated water, five drops to the ounce, which she was directed to wash her mouth with frequently. It healed readily, and to-day, two months after the operation, the old negro is well and is rejoicing.—*Southern Dental Journal*.

A VISIT TO FOREIGN DENTAL SCHOOLS AND OTHER OBSERVATIONS.

BY A. W. HARLAN, M.D., D.D.S., CHICAGO, ILLINOIS.

A recent visit to Europe enabled me to observe the workings of the dental schools of London, Berlin and Paris. Before describing what I saw and heard in London, a few preliminary remarks concerning requirements for admission to English dental hospitals may be useful. Applicants for entrance to British dental schools, who commenced the study of dentistry prior to 1878, are not required to pass the entrance examinations; all others must undergo a preliminary entrance examination, comprising English language, grammar and composition, English history, modern geography, Latin, including grammar and translation, elements of mathematics, vulgar and decimal fractions, algebra (simple equations), geometry, including the first two books of Euclid, elementary mechanics of solids and fluids, including statics, dynamics and hydrostatics, and one of the following optional subjects: Greek, French, German, Italian, or other modern language, logic, botany or elementary chemistry.

When the student has fulfilled the above requirements he is required to register himself as a dental student at the office of the General Medical Council. After such registration he must pursue his studies for four years in one of the recognized schools, including in that period an apprenticeship in mechanical dentistry under some registered dentist. Before taking his final examination for the L. D. S. degree, he must attain the age of twenty-one years. During the four years of studentship he attends lectures on general anatomy, pathology, chemistry, surgery, materia medica, physiology, and other general medical and scientific subjects in a regular medical school. He also does his dissecting, chemical and

histological work, including the work of dresser or assistant in a hospital ward in the same school. Dental anatomy, physiology, surgery, mechanical and operative dentistry, special therapeutics, anæsthesia and other special subjects, are taught in the dental hospital, including practical work in operative dentistry.

Instructions in mechanical dentistry, as before mentioned, is obtained from private sources. The theory of mechanical dentistry, including carving of bone, ivory, etc., manufacture of instruments, swaging, soldering, and the putting up of specimen cases, is taught in the dental hospital. Practical cases are not made in the dental schools of London. (I was so informed.)

On entering the Dental Hospital of London (founded 1859), situated on one side of Leicester Square, you at first find yourself in the reception room for patients (which is open daily, except Sundays, from 9 to 11 A. M.). A clerk or bookkeeper records the age, sex, residence, occupation and other facts of this nature relating to the patient, including the kind of operation which is required for his relief (filling, extracting, correction of irregularity, cleansing teeth, surgical operation, or other required service). The patient then goes up stairs, where he is received by the house surgeon or his assistant, by whom he is assigned to the student. There are always plenty of patients. If an anæsthetic is to be administered it is given by the regularly appointed anæsthetist of the school, or under his direction. He attends daily. At least one clinical instructor is present daily, who performs some operation in filling or otherwise, during his hours of service. The house surgeon and his assistant have charge of the operating rooms, and furnish the materials for filling, etc., to the student, who collects the fee. When the student gets a sheet of gold (No. 4) he pays thirty-six cents for it, and of course gets as much or more from the patient. No charges are made for plastic fillings, tin, gutta percha, or other services, except for gold, as above stated. This has a tendency to discourage the use of gold by the patient. He prefers the filling which costs nothing. The student, in consequence, does not get from this method of fees as much practical use of gold, even in twice the length of time, as he obtains in an American dental college. From what I saw I should say that very little cohesive gold is used by students in the hospital. Certainly not many large and complicated gold fillings are made by them during the two years' clinical work. They obtain a knowledge of the use of non-cohesive gold, however, which is perhaps quite as valuable in practice, because the English dentists as a class (with few exceptions) do not make, or attempt to make, large gold fillings, preferring plastics, pivoting or extraction, when cavities are large or teeth are pulpless; as they argue, from the system of fees which are in vogue, that it does not pay the operator; that people will not submit to prolonged operations, and that in many

cases large gold fillings will not prove as serviceable (through lack of care of the teeth after filling, etc.,) as frequently-renewed plastic fillings.

Root filling is taught, but I fear many (at present) do not practice it with that degree of care and thoroughness which we deem essential to success. It is not considered good practice in America, I believe, to fill roots of teeth with cotton, or to leave them unfilled and drill a vent-hole in the side of the root. Many dentists in Great Britain and on the continent practice in this way daily. American methods of filling teeth, and roots of teeth, have not taken that deep hold on the European practitioner which some theorists would gladly have one believe. Many foreign dentists—like some at home—read nearly everything that is published, but do not put into practice what in many cases would be better for their clients. They are content with the knowledge they possess, and do not easily or readily take up with new ideas. They are too conservative.

The rubber dam is used in the hospital. The gentlemanly house surgeon explained the methods of teaching, and was at considerable pains to show the *modus operandi* of ordinary operations. I think they have about one chair (not modern) for every three or four students. The operating rooms, although located on the fourth floor, are not well lighted, and are not sufficiently commodious, as there are two or three rows of chairs back from the windows. Dental engines were numerous, and many of them were in actual use. The students are not boisterous, they indulged in no loud talking, and appeared to be somewhat older than the average dental student at home.

Located in the same building is the office of the British Dental Association, and the journal of that society is issued from thence. The Odontological Society of Great Britain is also located on the lower floors, and their museum, rich in models, casts, skulls and other valuable materials in human and comparative anatomy, is open to the student desirous of gathering knowledge. The past and present students have a society, which holds monthly meetings in the hospital, an exceedingly great advantage for the juniors. They hold annual reunions and give a dinner to encourage social intercourse. Outside the entrance is a box for contributions for the support of the hospital. Soirées and subscription parties are also given from time to time for the support of the hospital. I thought, in ruminating over the subject, that if small fees were collected for all plastic filling operations, the contributions which are made by the benevolent, and the other funds coming into the hospital, might be used to reduce the cost of operations in gold, and thereby benefit the student by teaching him from actual practice the better methods of operating. I do not wish to be misunderstood in the above paragraph. The student is taught the methods, but he does not have enough practice in the use of gold while he is a student. The British journals publish a list of the operations

performed in the various hospitals every month, and any one can see the justice of these remarks. Here is one of the late reports:

Monthly Report of cases treated at the Dental Hospital of London, from October 1st to October 31st, 1885.

Extractions—	{ Children under 14,	378
	{ Adults,	912
	{ Under nitrous oxide,	276
Gold stoppings,		267
Other stoppings,		879
Advice,		121
Irregularities of the teeth,		97
Miscellaneous cases,		387

National Dental Hospital—same month.

Extractions—	{ Children under 14,	424
	{ Adults,	555
	{ Under nitrous oxide,	614
Gold stoppings,		121
Other stoppings,		625
Advice and scaling,		421
Irregularities of the teeth,		409
Miscellaneous cases,		146

Each statement is signed by the respective house surgeon. No report of roots filled, or abscesses treated, or crowns or pivot teeth adjusted. The records speak for themselves. In the report of the National Dental Hospital, for the year 1885, there is a record of 9,001 fillings, of which number 1,014 were made with gold. I have not seen the report of the Dental Hospital of London for the same year, but the monthly reports of fillings average about the same; that is to say, not quite twelve gold fillings in every hundred inserted. One unconsciously gathers from this, that the insertion of such a large percentage of fillings other than gold has a tendency to discourage thorough cleansing and preparation of cavities. Hence the frequent failure of plastic operations.

I visited the National Dental Hospital also, and the methods of teaching are substantially the same, the hours of attendance of patients, operators, house surgeons and clinical instructors, occupying about the same number of hours. This school is younger and it occupies smaller quarters, but in other respects I should judge that the instruction is quite as thorough and scientific as that given in the older school. The fees are not quite as high. I found the house surgeon quite as willing to show me the working of the school as his *confrère* in Leicester Square. I visited the hospital on a rainy morning, in the company of another American dentist, and while there a discussion arose concerning the use of filling materials. The house surgeon argued that it was almost useless to insert gold fillings for the

class of patients who visit infirmaries, as such people took no care of their teeth. I took the other side, or the student's side, which was that it was a benefit to him, as it taught the use of instruments, the manipulation of gold, and that he would be better prepared to operate for himself when launched into the arena of daily personal practice. The question was not settled, but I hope that I impressed him with the importance of the proposition. This is the principal observable defect in the clinical instruction of each school. If there are forty students in a school for the year, and only 1,000 fillings of gold inserted during that time, it indicates a small average in the total number of fillings for each student.

The English student is well instructed in the use of anæsthetics; much better than are Americans. He learns more of comparative anatomy than we teach, and generally well drilled in normal and pathological histology. Dental surgery and special therapeutics, I believe from what I saw and heard, are better understood at home, by our college-educated dentists, than by our English cousins. This is my impression from many conversations held with dentists of low and high degree. They are better mechanics in the work-shop, *en masse*, but not so ingenious or inventive. When it comes to the final examination, we must take a back seat, as the licensing bodies are not the teaching corps. When we adopt—as we must in time, and I hope very soon—that feature of professional education, then will our diplomas be like Cæsar's wife, above suspicion.

We deliver more didactic lectures in a six months' course in America than an English student listens to in eighteen months. By different methods we arrive at the same result. They consume more time, but place them side by side in practice in a working society, in the field of journalistic contributors, and our own American graduates will hold their ground quite as well as the subjects of the Queen. The amount of valuable material published in professional journals in America attests this.

The British dentist is more social, and that element in his nature almost overshadows the scientific and practical side, even in dental societies. Their method of conducting meetings of societies has much in it to commend. Members do not straggle in at all hours, after business has begun, and no talking or whispering goes on while a speaker has the floor. The business of the meeting is conducted in a dignified manner. This to some might appear dull and prosy, but it pleased me. Scientific work is no laughing matter, and for a few boisterous, ill-mannered persons to talk and laugh and whisper while a scientific paper is being read, which has required weeks or months of labor to prepare, is a poor compliment to pay to the author. Hence this decorousness impressed me more forcibly, as I have been in society meetings where attention was almost wholly diverted from the business in hand, to listen to a story or other trivial matter.

English fees are not based on anything but tradition. There is no justice to the operator in receiving but a guinea for his maximum fee. I will not say that larger fees are not charged or collected by English dentists, but the custom for those of the highest rank is to receive about \$5.00 for each operation performed, be it easy or laborious. Americans practicing in Great Britain usually try to transplant American ideas, but they do not all succeed, as I heard of some who have adopted the English custom. Fees for artificial teeth are even higher than in America—and also lower—for in America no one ever heard of a dentist inserting a single tooth on rubber base for four shillings and six-pence—about \$1.10. As you descend in the grade of practitioners the fees decline also, fillings being inserted for a shilling, and artificial teeth going for a song. The custom prevails of inserting teeth over roots which are unfilled, and, as every one knows, it is a very filthy method.

Our American advertising dentists could learn a thing or two from the sons of Albion, were they in search of such information. The marvellous things they tell in newspapers of their exploits and their own “patent” “soft,” “easy-fitting” “cushions” for “tender gums,” and the brushes, powders and elixirs which they have in hand, and other allurements for the money, are too numerous to mention. These charlatans are a class by themselves.

The English operating room is not as easily entered as are ours at home, except by the favored few. Our own easy good nature and carelessness of the feelings of our patients, permits us to open our doors to nearly every caller, on the most trivial pretext. They are more careful in this respect. We ought to be.

When one enters a dental goods establishment and asks for anything new, they immediately show something from America. But by persistent questioning and keeping the eyes open, one will finally see a number of inventions and improvements on American instruments which cannot be found in America, because they are contraband. On account of the murky atmosphere in London dentists either have to operate but few hours daily, or use artificial light. Hence there are many forms of reflectors and globes which we are unaccustomed to see. I found better nerve extractors than we can get at home; likewise syringes, explorers, files, and a number of little odds and ends which have to be picked up here and there as you see them, for, singular to relate, many of my choicest “finds” are not in catalogues or in the advertising pages of any dental journal. In conclusion I have only to state that everywhere I was most courteously received and hospitably entertained, and if I have seen some things to criticise I have been equally unsparing of things and customs at home. In the next number of this journal I will continue my running observations.

—*Independent Practitioner.*

DEATH FROM CHLOROFORM.

Of the unfortunate death of the Lady Flora Wilmot, whilst under the influence of chloroform for the extraction of a tooth, Mr. J. Farrant Fry, the medical practitioner who administered the anæsthetic, communicates to *The Lancet* the following observations:

I beg to forward you particulars of the recent death here from chloroform. The Lady Flora Wilmot, aged twenty-five years, had been under my care, for various minor ailments, during the last eighteen months. With the exception of a gouty tendency, her constitution was, I believe, sound. On Wednesday, February 24th, I was asked to meet her at Mr. Scott's residence at Swansea (her dentist), for the purpose of administering an anæsthetic for the extraction of the right molar tooth. Nitrous oxide gas not being available, I gave chloroform in preference to bichloride of methylene or ether (both of which I had by me), because for the purpose I considered it the best anæsthetic, and also because her ladyship, having taken it two or three times before, expressed a preference for it. Everything about the chest being perfectly loose, and the patient sitting in the dentist's chair, less than a drachm was sprinkled on lint in an open inhaler, which the gag kept from closely fitting round the mouth and nose. A similar quantity of chloroform was added a second and third time before perfect anæsthesia occurred. The tooth was then removed, and recovery followed without a bad symptom. The patient had taken it capitally, and in all two drachms had been given. Five days afterwards (March 1st) I again administered chloroform for Mr. Scott (this time at the patient's residence) to remove the adjoining bicuspid tooth. The patient was seated in a low deep-backed, well-pillowed easy chair, and was therefore more reclining than on the former occasion. The result of the chloroform before having been so satisfactory, I again administered it in the same way, and, as before, two drachms were given in all, with a similarly good result. The inhaler having been removed, Mr. Scott took out the tooth, cleansed his forceps, and stood by the patient's side. I remarked, "I hate giving chloroform for you dentists, because you will have your patients sitting up." This led to a reply from Mr. Scott, who then poured out a tumblerful of water and asked the patient to rinse her mouth, as the gums were bleeding. No water was taken, and I observed she was not sufficiently conscious yet, and we still stood by the patient. I had, during this time, one finger on the temporal artery, whilst with the other hand I was raising the eyelid and watching the pupil, which, having been dilated during unconsciousness, had become normal and the conjunctiva sensitive. Suddenly the pupil became again widely dilated, I could no longer feel the pulse, and the face became

blanched. The chair was immediately turned back, the head lowered to the ground, and the body and limbs raised. Nitrite of amyl sprinkled on a handkerchief was applied to the nose, and, although the heart could not be felt beating, the breathing still continued for, I should say, at least two minutes. Artificial respiration, drawing out the tongue, and lifting the jaw forward, were of no avail—not the slightest sign of recovery followed. A *post-mortem* examination was refused.—*The Dental Record*.

AS MOST of our readers are already aware, Lady Flora Wilmot died on Monday, March 1, immediately after taking chloroform for the extraction of a tooth. The dental surgeon and the medical man who administered the anæsthetic were both completely exonerated by the jury. The dentist, indeed, stood in no need of exoneration, seeing that by leaving the administration of the anæsthetic to a brother professional man, and not attempting to administer it himself, he freed himself from all responsibility and secured the sympathies of every member of the profession under the painful circumstances that attended the operation. The case does, however, render more obvious, if possible, the risk attending any attempt to combine the two functions of operator and administrator. These untoward events happening to men of skill and experience, and in spite of every precaution, are very properly viewed by juries, the public, and the profession, as matters for commiseration and sympathy rather than criticism. For the future, however, we trust we shall never again read of chloroform being administered for the extraction of a tooth.—*Extract from Journal of The British Dental Association*.

AN INSULT TO BRITISH DENTISTRY.

“Will not that be a thing worthy of ‘doing;’ to deliver ourselves from quacks, sham-heroes; to deliver the whole world more and more from such? They are the one bane of the world. Once clear the world of them, it ceases to be a Devil’s-world.” These words of Carlyle express the motive which has actuated *The Medical Press* (April 21st), in a vigorous article upon a certain pamphlet—“A few Remarks on American Dentistry in England.” The names of the authors of this advertising medium are not to be found in the *Dentists’ Register*, yet they write:

“The ordinary English dentists are men who have had no hospital education; in fact, no opportunity of seeing thoroughly good operative or artistic dentistry; whose time has been spent in making artificial

teeth in perfect rows in the laboratory or work-room of some other dentist, and, having saved a little money, they start in practice themselves.

“In the two Dental Hospitals in London, which are the best schools for English dentists, thousands of teeth each year are extracted that should, and can be, saved, which is not only a disgrace to the dentistry of England, but it teaches the young dentist to put no value on their patients’ teeth.

“Those who do value their teeth and wish to save them, are cautioned to avoid the ordinary English dentists, and to assist in protesting against either having teeth extracted themselves or permitting others to have them extracted.”

The foregoing paragraphs are downright insults to English dentists, to teachers of dentistry in England, and to the intelligence of the English people. There is reason to believe that they who are responsible for these gross libels are not Americans. Certainly, no one with the least regard for a possible reputation, or for other than purely personal motives, would utter such statements. The article of *The Medical Press* will receive the general approval of the dental profession; but, alas! the unwary public will require many such remedial measures, ere it will sing, “Quacks shall no more have dominion over us, but true Heroes and Healers!”—*The Dental Record*.

A REPREHENSIBLE PRACTICE.

“For ordinary nervous toothache, which is caused by the nervous system being out of order by excessive fatigue, a hot bath will so soothe the nerves that sleep will naturally follow, and upon getting up the patient will feel very much refreshed and the toothache gone. For what is known as the “jumping” toothache, hot, dry flannel applied to the face and neck is very effective. For common toothache, which is caused by indigestion, or by strong, sweet, acid, or anything very hot or cold in a decayed tooth, a little piece of cotton, steeped in strong camphor or oil of cloves, is a good remedy. Care in the diet, especially when the bowels are disordered, is helpful to mitigate toothache. *If the tooth is much decayed, nothing is better than its extraction.*”

The above is the greater part of an article clipped from the Sunday edition of one of the most widely circulated newspapers in this country. The italics are ours. We desire to protest against the reprehensible, though perhaps unwitting, practice of giving to the public through widely circulated mediums such teaching as the above. It is a well known fact

that many people give credence to just such paragraphs, and in many instances follow their directions to the letter. It has often occurred, for instance, that inexperienced persons have, through newspaper or incompetent advice, poulticed the outside of the face to relieve a severe toothache, and as a result pointed an abscess to the outer side of the face, causing in the end a disfiguring scar for life. It will be noticed that, in the quotation above given, not even a mention is made of a dentist, such an insignificant and useless person not being considered in the estimation of many. It would be considered criminal practice to publish an item of a medical nature, if in the carrying out of its directions harm would result to the individual. None the less should it be considered a criminal act to mislead the mind by the publication of articles setting forth such villainous advice in the treatment of an ailment so common as toothache, but which could be made far less so, if the minds of the masses could be reached by wise counsel. The advanced practice of the present day is tending more and more towards the complete salvation of the teeth and not their ruthless destruction, even though "the tooth is much decayed." Time was when dentists were curiosities and dental ailments were attended by physicians, horse-doctors, blacksmiths and barbers. But that time has happily passed, and no community now suffers the want of the invaluable services of the dental surgeon. True, in too many instances the people do not seem willing to trust the opinions of the dentist, but think a physician must be consulted in order to obtain the best treatment of ailments which have been made the special study of the former but have been neglected by the latter. It is often the case where patients will willingly pay one or two dollars to have an alveolar abscess lanced by a physician, but will complain loudly if a dentist would charge for a like service twenty-five or fifty cents. In these days of the practice of specialties people should be shown the importance of consulting the right authority regarding their disorders, and to avoid advice from an unreliable and unauthentic source in the treatment thereof.—*The Dental Eclectic.*

A BROKEN JAW.

During the fore part of November, 1885, Joseph W., a laborer aged about forty years, presented himself at the Infirmary of Missouri Dental College for treatment of a broken jaw. His face and neck were badly swollen, and the glands in the submaxillary region very much indurated. He was pale and had a fever; said he had been struck with a fist on the right side of his jaw, about ten days before. An examination revealed an oblique fracture of the inferior maxilla on the right side,

between the second bicuspid and first molar, the jaw was drawn downwards and to the left; the teeth on either side of the fracture were loose and elongated; treatment was commenced by temporarily adjusting the parts, and an external splint made of pasteboard was applied and retained by a Barton bandage. The swelling was so great that an impression of the jaw could not well be taken. Quinine in large doses was prescribed and the patient directed to return on the fourth day, when the swelling was considerably reduced and the patient felt some better. An impression of both jaws was then taken in wax (the inferior maxilla being supported by the hand of an assistant). From this impression plaster models were made. The patient's teeth were then articulated, which was readily done as but two had been lost. The model of the lower teeth was next divided at the site of fracture, and adjusted so as to articulate with the upper teeth when placed in their proper position. The models were then placed upon an articulator (to retain their proper position) and separated about three-eighths of an inch. A splint was then made of vulcanized rubber to hold the jaws of the patient apart, and cover both upper and under teeth, similar to that made by amyth and used by Liston, the buccal portion extending far enough forward to cover a part of the canines, leaving the incisor teeth exposed. A narrow band passed over the anterior portion of the palatine arch and another on the lingual surface of the inferior incisor teeth, connecting the two sides together, leaving a space in front more than an inch in length by nearly three-eighths of an inch in width, through which to take food.

This appliance was then placed in position; an external splint of pasteboard was applied and the jaw bound firmly in place by a roller bandage passing over the head and in front of the chin. By this means the jaw was immobilised and held in proper position. A mouth wash was directed, but owing to his negligent habits the patient did not make much use of it.

In two weeks time the splint was removed and the teeth found in a very unclean condition, some of the glands had suppurated and broken down and were opened. After cleansing the parts the appliance was replaced as before, and the patient directed to call once a week. At the end of twenty-eight days no union of the broken jaw had taken place, and the sufferer protested against applying the splint again. It was finally replaced, however, and allowed to remain in position two weeks longer, after which time it was removed, and the parts were found to be united. The articulation of the teeth had been preserved, and was perfect, very little necrosis had taken place, and the patient at this time, February 15, 1886, is fast improving, the bandage being still applied.

H. C. MILLER, D. D. S.,
Demonstrator in Charge.

PROFESSOR HUXLEY ON SMOKING.

At a certain debate on smoking among the members of the British Association, Professor Huxley told the story of his strugglings in a way which utterly put the anti-tobacconists to confusion. "For forty years of my life," said he, "tobacco had been a deadly poison to me. [Loud cheers from the anti-tobacconists.] In my youth, as a medical student, I tried to smoke. In vain! At every fresh attempt my insidious foe stretched me prostrate on the floor. [Repeated cheers.] I entered the navy. Again I tried to smoke, and again met with defeat. I hated tobacco. I could almost lend my support to any institution that had for its object the putting of tobacco-makers to death. [Vociferous cheering.] A few years ago I was in Brittany with some friends; we went to the inn; they began to smoke and looked very happy, and outside it was very wet and dismal. I thought I would try a cigar. [Murmurs.] I did so. [Great expectations.] I smoked that cigar—it was delicious! [Groans.] From that moment I was a changed man, and now I feel that smoking in moderation is a comfortable and laudable practice, and is productive of good. [Dismay and confusion of the anti-tobacconists. Roars of laughter from the smokers.] There is no more harm in a pipe than there is in a cup of tea. You may poison yourself by drinking too much green tea, and kill yourself by eating too many beefsteaks. For my own part, I consider that tobacco, in moderation, is a sweetener and equalizer of the temper." [Total rout of the anti-tobacconists, and complete triumph of the smokers.]—*Medical and Surgical Reporter*.

INHALER FOR ETHER.

It is well known that the less ether one inhales in order to become unconscious, the less disagreeable will be the after effects; and the less air one inhales, the easier and shorter will be the process of etherization. A good inhaler must have four good qualities. It must be of a convenient size and shape; it must economize ether and exclude air; it should be simple in construction, so that it may readily be cleansed; and it ought to be cheap in price. A sponge will neither exclude air nor economize ether. A good one is, moreover, very expensive and difficult to obtain. On the other hand, many inhalers in the market have their excellent points, but all are at the same time expensive. After many experiments and unsuccessful attempts to obtain an inhaler satisfactory to me in every respect, I thought of the following device, and can recommend

it as the best and most economical inhaler. Buy the small-sized bowl that the dentists use for mixing plaster in—the so-called plaster-bowl. It is made of soft, vulcanized rubber, and is about four inches in diameter, and three inches in depth. It is so soft that it will fit closely to the face, and exclude atmospheric air, and at the same time prevent the evaporation of the ether. Within this bowl place any cheap sponge of suitable size, and the inhaler is complete.—*Technics*.

OF COURSE.

On page 240 of the May number of the *Dental Record* we find the following:

“In the course of the recent Bartlett trial, Mr. T. Roberts, dental surgeon, was giving evidence as to the late Mr. Bartlett’s teeth, when the Judge asked him—‘Did you use any solution on his gums?’ ‘A solution of cocaine, which is a drug lately used to promote local anæsthesia.’ ‘Is it a vegetable or mineral drug?’ ‘I don’t know.’ The Judge—‘It is an active principle of the cocoanut, is it not?’ ‘I really can not say.’ (The *Dental Record* had not been read.—ED.)”

“The active principle of the cocoanut” is pretty good for a Judge. This is probably the same court that decided that pineapples grow on pine trees, and that crab apples are the fruit of the fresh-water lobster, and that watermelons are cultivated in water, and that gooseberries are hatched by geese, and that dogs grow on dogwood trees, which accounts for their bark. It is quite convenient when a court can draw its own inferences without borrowing a corkscrew.—*Ohio State Journal of Dental Science*.

BITING OFF THREADS.

Many ladies use their artificial teeth as substitutes for scissors; and such use of them soon renders repair necessary. When told they should not bite threads with them, they are surprised, and sometimes exclaim, Why, only a thread? why Mrs. Blank bites bread crusts with hers! Then they should be taught not to use even their natural teeth for such purposes. But few think that in biting off a thread the entire muscular force of the jaws in use is concentrated into the small space measured by the diameter of a thread. Besides, thread after thread is applied to the same place on the teeth, and thus the enamel is soon broken there.—*Ohio State Journal of Dental Science*.

THE PRESENCE of a third person in the administration of anæsthetics in dental operations is of vital importance, especially in the case of female patients. Illusions are apt to arise in the minds of women liable to hysterical attacks, which often are so forcibly impressed as to lead to serious and most damaging legal complications. The following suggests that in some instances the "illusion" may not be entirely groundless, all of which, however, might have been prevented by the attendance of a third person on the operation: In the mountain districts of North Carolina the daughter of one of the illicit distillers of the region went to a dentist in ——— to have four teeth extracted. They were molar teeth and large ones, so the dentist induced the girl—who was particularly pretty—to take nitrous oxide gas. As she was such a handsome "subject," the dentist, who was an unmarried man, could not resist the temptation to steal a kiss for every tooth he extracted while she was unconscious. The young woman was not so much "under the influence" as he thought and she determined to pay him back in a novel manner. On arising from the chair she said she had forgotten the money, but would send the amount (\$4) by her father next day. The next morning a six-foot "moonshiner" came into the dentist's office and presented the practitioner with a bill from his fair customer, in which she gave him credit for extracting four teeth, and charged \$4 each for the four kisses, adding at the foot of the bill the significant words: "Pa will collect the balance—\$12." The dentist sized "Pa" up at a glance and paid the bill.—*The Dental Eclectic*.

A DOCTOR'S LUCK.—The *Philadelphia Press* states that Dr. Thomas C. Stellwagen, a dentist of that city, and a resident of Media, Pa., has come into the possession of a handsome fortune by the death of his aunt, the widow of the late Dr. Dickey, of Atlanta, Georgia. The story goes that Mrs. Dickey, assuming to be in want, addressed letters to relatives in Maryland and Pennsylvania, soliciting aid, but that Dr. Stellwagen was the only one who responded favorably. He sent her two checks for \$50 each, and wrote that he hoped his small contributions would help her. Three months ago Dr. Stellwagen received a letter from his aunt saying she was very sick, and requesting him to come to Atlanta. He obeyed the summons, and when he reached Atlanta was dumbfounded to find that Mrs. Dickey was living elegantly and that she was wealthy. She told him that she wouldn't live long; that she wanted to go home with him, and it is said deeded everything to him, and made him a present of all her household furniture, silverware and jewels. It is also said that the professor left behind him, in the Southern city, a row of handsome dwelling houses. Two days after reaching the Doctor's house in Media Mrs. Dickey died.

AMERICAN DENTISTS ABROAD.—Consul-General Raine, at Berlin, informs the Department of State that the Prussian Minister of the Interior and Medicinal Affairs has recently issued an order whereby dentists who have graduated in the United States are prohibited from practicing as “royally licensed” dentists. They can procure, however, a regular “trader’s license,” and practice under the same. They are prohibited entirely from establishing or opening dental dispensaries (clinical institutions), where practical dentistry is taught, but may receive patients for treatment. Licensed American dentists may be allowed to give instruction in technical dentistry, but are prohibited from lecturing and teaching dental surgery generally, or to give their places the character of a medical school, unless previously authorized to do so by the government.

A correspondence some years ago with the Hon. James G. Blaine, the Secretary of State, in regard to the status of diplomas from reputable American Dental Schools, revealed the fact that there is a disposition, on the part of the German officials, to discountenance the practice of German students leaving their own country for better educational advantages. This action of the Prussian Minister of State will not, however, affect the standing of American-educated dentists who may locate in Germany, as naturally their operations must in the end influence such practice, and maintain the high reputation in which the well educated practitioner is held throughout Europe.—*American Journal of Dental Science.*

THE FIRST STEP is to procure a *proper* blow-pipe. This, unfortunately, is difficult. I have endeavored to get dental supply manufacturers to furnish such, but as yet without avail; why, I do not know. The blow-pipe furnished for dental use is the same used by jewelers, whose requirements are entirely different. They use much lower grade solders; small articles to solder, and not inserted, as a set of teeth must be, in plaster and sand, or asbestos. The small blast will suffice for them; dentists require a larger flame, and a stronger, fuller blast.—*Dr. L. P. Haskell, in Ohio State Journal.*

The above extract strikes us as rather old-fashioned. Perhaps the doctor has not learned of the improvements in power blow-pipes, or realized the comfort of a foot-blower. Blow-pipes are now made that control both gas and air jets perfectly, and perform their work expeditiously. We commenced using a mouth blow-pipe thirty years ago, but long since abandoned it for something that saved time, labor, perspiration and wind. We would as soon think of discarding the dental engine as the power blow-pipe. Verily “the first step is to procure a *proper* blow-pipe,” and a dental supply manufacturer will furnish one of the right pattern every time; and it will not be an old-fashioned mouth blow-pipe either, but one that will supply a large flame and strong blast; and, when required, as fine and delicate a point of flame as is possible to make.

DR. R. E. CURRAN, of Ventura, Cal., suggests the following method for removing foreign substances from the eye: A friend applied for relief the other day with "something in his eye," which amateur efforts had failed to find or remove. Reflected light showed a foreign body on the cornea, and a magnifying glass revealed the fact that a splinter of steel had penetrated the conjunctiva obliquely, and was entirely covered. Attempts to remove it with spud were unsuccessful, and there was danger of perforating the cornea; but, while applying solution of cocaine with dropping-tube, the idea of *suction* was suggested, and, covering the wound with mouth of dropping-tube, with a gentle reverse motion of the bulb I was happily successful in the first effort.

A SPECIAL to a Buffalo paper of recent date states that an action has been brought by Ida E. Parks against a Rochester dentist, to recover \$10,000 damages alleged to have been sustained by the plaintiff at the hands of the defendant, in January, 1885. The dentist administered, she says, nitrous oxide gas at her request, and claims the gas was bunglingly administered, and caused her great pain and sickness.

BUFFALO has four medical journals, two medical colleges and six medical societies and medical clubs, to say nothing of the irregular organizations. —*The Southern Practitioner*.

To which may be added two dental journals, one local dental society and one district dental society. The district dental society has the best dental library in the State, if not in the United States.

THE DIRECTOR of the mint reports the amount of gold and silver used in the arts and manufactures in the United States for 1883 to be: gold, \$14,459,464; silver, \$5,556,530, making a total of \$20,015,994. There was consumed for dental supplies: gold, \$37,912; silver, \$6,738, making a total of \$44,650.

DENTAL SOCIETY MEETINGS.

THE AMERICAN DENTAL ASSOCIATION.

CHICAGO, April 16, 1886.

To the Members of the American Dental Association:

The votes of nearly all the members have been received. A majority of the votes cast are in favor of Chicago over all other places. A very large

majority pledge their attendance if the meeting shall be held in Chicago. But in deference to the minority, and for the sake of harmonizing all differences, as Chairman of the Executive Committee and Committee of Arrangements, I hereby, with the consent of my colleagues, announce the next place of meeting to be at Niagara Falls, August 3.

J. N. CROUSE, *Chairman of Executive Committee*,
2231 Prairie Avenue.

CHICAGO, June 18, 1886.

The Committee of Arrangements had hoped to give full and definite information in the July number of journals in regard to all the details of the arrangements for the annual meeting of the Association, to be held at Niagara Falls, August 3d; but as the railroad rates thus far secured have not been as satisfactory as the Committee yet hope to secure and are working for, they will issue a circular later to all members of the Association, and to local societies as far as possible. Those who are not members of the Association, and who wish the circular, will please drop a postal to the Chairman of the Committee, to insure their getting it. The railroad rates, as thus far secured on all leading lines, are one and one-third fare round trip, to be issued upon presentation of certificate. Definite information concerning this will be given in the circular, if better terms and arrangements are not secured.

The hotel rates will be as follows: The International Hotel will receive dentists and their families at \$3.00 per day; the Cataract, at \$4.00 per day. The Niagara, Prospect Park and Hotel Atlantique, \$2.00 per day, if rooms are applied for and secured in advance.

The Park Theatre, adjoining the International Hotel, has been secured as place of meeting.

Do not be anxious about not receiving the circular. It will be sent out some time in July, but a few days delay in issuing the circular may mean a good deal of money saved to those attending the Association. For instance, the arrangements were not completed and circular issued until the latter part of July last year. A month earlier it would have been *impossible* to have gotten the low rates finally secured. Remember, we *promise* nothing better than we now publish, but will continue to work for more favorable terms.

All State and local societies which have adopted substantially the Code of Ethics of the American Dental Association will remember that they are entitled to one delegate for every five members. Such delegates must have credentials signed by the President and Secretary of the society which they represent.

J. N. CROUSE, *Chairman Committee of Arrangements*,
2231 Prairie Avenue, Chicago, Ills.

As announced above the Association will meet this year at Niagara Falls, in the new Park Theatre or Casino, contiguous to the International Hotel and facing the State Reservation. The Casino is a new building in the Queen Anne style, with the introduction of numerous balconies, loggias and bay windows, which, with a quaint roof, give the building a strikingly tasteful appearance. The auditorium is also in the Queen Anne style, seventy-five feet by forty-five feet, and thirty-two feet high, with a stage fifty-five feet wide by thirty-five feet deep. It is well lighted and ventilated both day and night.

Ample provision has been made for clinics, and a room has been secured in the building which besides being well lighted overlooks the rapids and falls.

The International Hotel will furnish carriages to drive around Goat Island, Prospect Park, Table Rock, Whirlpool Rapids and Whirlpool, over Suspension Bridge and return—the trip occupying from four to five hours,—for 90 cents each person, five persons to go in each carriage. Application for carriages must be made at hotel office.

Although Goat Island and Prospect Park are free, there are many places of interest in the vicinity that require tolls. New Suspension Bridge, over and return, 25 cents each person; Whirlpool Rapids, 25 cents each (this is one-half rate); Whirlpool, 25 cents; Maid of the Mist at reduced rates.

ILLINOIS STATE DENTAL SOCIETY.

The following officers were elected at the Illinois State Dental Society meeting, held at Rock Island, May 11th to 14th: President, Dr. W. T. Magill, Rock Island; Vice-President, Dr. C. B. Rohland, Alton; Secretary, Dr. J. W. Wassall, Chicago; Assistant Secretary, Dr. Louis Ottofy, Chicago; Treasurer, Dr. T. W. Prichett, Whitehall; Librarian, Dr. W. B. Ames, Chicago. The next meeting will be held at Jacksonville, the second Tuesday in May, 1887.

DENTAL FACULTIES.

CINCINNATI, May 1, 1886.

The Third Annual Meeting of the National Association of Dental Faculties will be held at Niagara Falls, Wednesday, August 4, at 3 P. M.

C. N. PIERCE, *President*,
H. A. SMITH, *Secretary*.

SIXTH DISTRICT DENTAL SOCIETY.

The following is the list of officers elected at the Seventeenth Annual Meeting of the Sixth District Dental Society of the State of New York,

held at Binghamton, Tuesday, May 11, 1886: President, G. W. Melotte, Ithaca; Vice-President, S. W. Adamy, Union; Secretary, E. D. Downs, Owego; Treasurer, Frank B. Darby, Elmira; Censor, C. G. Sumner, Norwich. Delegates to State Society: G. W. Melotte, Ithaca, 4 years; Frank B. Darby, Elmira, 4 years; C. E. Dunton, Cazenovia, 1 year.

NATIONAL DENTAL ASSOCIATION.

The next regular biennial meeting of the National Dental Association of the United States of America will be held at Washington, D. C., July 27, 28 and 29, 1886.

R. B. WINDER, *President*,
Baltimore, Md.
R. FINLEY HUNT,
Washington, D. C.

BOOKS RECEIVED.

THE LIBRARY MAGAZINE. Monthly. New York: John B. Alden, 393 Pearl Street. Price, \$1.50 a year.

POCKET DISEASE OF THE ALVEOLUS. By J. N. Farrar, M. D., D. D. S. Reprint from the *Independent Practitioner* for April, 1886.

PAPERS ON A SYSTEM OF REGULATING TEETH BY INTERMITTENT PRESSURE, BASED UPON PHYSIOLOGICAL LAW. By J. N. Farrar, M. D., D. D. S., New York City.

ON THE LIMITATION OF THE CONTAGIOUS STAGE OF SYPHILLIS, ESPECIALLY IN ITS RELATIONS TO MARRIAGE. By F. N. Otis, M. D., Clinical Professor of Genito-Urinary Diseases, in the College of Physicians and Surgeons, etc., New York; Surgeon to Charity Hospital, etc. New York: William Wood & Co., Publishers, 56 and 58 Lafayette Place.

TWENTY-FIRST ANNUAL ADDRESS, DELIVERED BEFORE THE MASSACHUSETTS DENTAL SOCIETY, at its meeting in Boston, December 10, 1885. By D. B. Ingalls, D.D.S., of Clinton, Mass.

DENTAL PATENTS.

ISSUED FOR THE QUARTER PRECEDING THE DATE OF THIS JOURNAL.

-
- 339,958—April 13, 1886.—ARTIFICIAL TOOTH.—James W. White, Philadelphia, Pa.
 - 340,553—April 27, 1886.—DENTAL TOOL.—Charles H. Cannon, Providence, R. I.
 - 340,778—April 27, 1886.—HOLDER FOR GAS INHALERS.—William H. Gilbert, Philadelphia, Pa.
 - 340,787—April 27, 1886.—DENTIST'S CHAIR.—William A. Johnston, Clifton, and Arthur W. Browne, Westfield, N. Y.

THE DENTAL ADVERTISER.

- 340,896—April 27, 1886.—DENTAL PLIERS.—Eli T. Starr, Philadelphia, Pa.
341,243—May 4, 1886.—VULCANIZER.—John Wood and Stephen H. Reynolds, Boston, Mass.
341,929—May 18, 1886.—MECHANICAL DENTISTRY.—William D. Mayfield, Fort Worth, Texas.
342,042—May 18, 1886.—DENTAL MOUTH TUBES.—Thomas W. Rowney, Derby, Eng.
342,107—May 18, 1886.—DENTAL PLUGGER.—Robert B. Kice, Richmond, Mo.
342,271—May 18, 1886.—ARTIFICIAL TOOTH CROWN.—Eli T. Starr, Philadelphia, Pa.
342,618—May 25, 1886.—DENTAL VULCANIZER.—William B. Mann, Baltimore, Md.
342,761—May 25, 1886.—ARTIFICIAL TOOTH CROWN.—Moses Reynear, New York, N. Y.
343,117—June 1, 1886.—RUBBER DAM CLAMP.—Francis Eschauzier, Albany, N. Y.
343,255—June 8, 1886.—AUTOMATIC REGULATOR FOR DENTISTS' VULCANIZING APPARATUS.—Charles F. Scattergood, Albany, N. Y.
343,495—June 8, 1886.—DENTAL VULCANIZER.—Frederick W. Seabury, Providence, R. I.
343,845—June 15, 1886.—DENTAL ENGINE ATTACHMENT.—Safford G. Perry, New York, N. Y.
343,967—June 15, 1886.—DENTAL PLATE.—Albert Robinson, Grand Rapids, Mich.
-

Second-Hand and Shop-Worn Goods FOR SALE CHEAP.

MISCELLANEOUS.

- Wood Polishing Points. Manufactured by the patentee, Dr. Southworth. 100 in a box. Price, \$1.25; will sell for 50 cents per box.
One Lot Jarvis Separators. Will sell for 50 cents each.
One Lot Johnston Bros. Reflectors, to attach to Rubber Dam Clamps, throwing light into cavities. List price, \$2.75; sell for \$1.50 each.
One Pair Plate Benders, as shown on page 290 S. S. White's Catalogue. \$1.50.
One Pair Pin Heading Forceps. \$1.50.
One Lot Ross Polishing Powder, for polishing Rubber Plates. Put up in 1-lb. boxes. Per box, 15 cents.
One Lot Pin Racks, for Snow & Lewis' Automatic Points. Curved, to hold 18 or 36 points, and square, to hold 24 points. Each, 50 cents.
One Blake's Duct Compressor. \$1.50
Aluminum Solder, per ½ ounce, 50 cents.
One Lot Bur Gauges, nicely Nickel-plated. Each, 25 cents.
Plate Tooth Holder, to hold Teeth while grinding. Each, 15 cents.
Blodgett's Tooth Wash. Per dozen, 50 cents.
One Brass-Bound Mahogany Case, 16½ x 11 x 4¼ inches, as shown on page 212 S. S. White's Catalogue. Without trays. Cost, \$20.00; will sell for \$15.00.
One Rolling Reclining Invalid Chair, in perfect order. Cost, \$36.00; sell for \$25.00.
One Archer Chair, with Foot-stool attached, Crane, Table and Spittoon. Newly recovered and varnished. In first-class condition. \$45.00.
One Haid Electric Mouth Lamp, complete, with battery, in perfect order. \$12.00.

INSTRUMENTS.

One Lot Teeth Forceps, oval-jointed, of different makes, and a variety of shapes, all new. Per pair, \$1.50.

One Pair Wedge Cutters. \$1.50.

One Pair Plugging Forceps. \$1.50.

One Pair Fulcrum Forceps. \$1.50.

One Job Lot Steel-Handled Pluggers and Scalers, various makes, nearly all the different shapes used. Per doz., \$3.00.

These instruments are of just as good material and temper as any now made, but the handles are of different shapes and sizes.

One Shell-Handle Single Blade Pocket Lancet. 50 cents.

One Johnston Cone Journal Hand Piece, in perfect order. \$7.00.

One Left-handed Lower Molar Forcep, Nickel-plated. \$1.25.

Two Left-handed Upper Molar Forceps (right and left side), Nickel-plated. Each, \$1.25.

DENTAL BOOKS.

One Cole's Deformities of the Mouth. Second edition. \$1.00.

One Leber & Rottenstein's Dental Caries. 45 cents.

One Tyson's Cell Doctrine. \$1.50.

One Huxley Elementary Lessons in Physiology. \$1.00.

MACHINERY.

One Glycerine or Hot-Air Celluloid Apparatus. Cost, new, \$8.00; will sell for \$3.00. This will make an excellent flask press, having an iron pot in which the flask can be simultaneously boiled and pressed.

One Hopkins Gas Regulator, in good working order. \$10.00.

One Forty-Gallon Gasometer. \$10.00.

One Hand Lathe. \$2.00.

One Gas Apparatus, consisting of 100 gallon Cylinder, S. S. White Inhaler, Gas-bag and Tripod. All new, except Tripod. \$29.00.

NEW STYLES OF THE LEWIS GASOMETER

We have the pleasure of presenting to the profession two new styles of the popular LEWIS GASOMETER. The new styles are made entirely of

• • • • • ORNAMENTED • BRASS, • • • • •
LACQUERED OR NICKEL-PLATED.

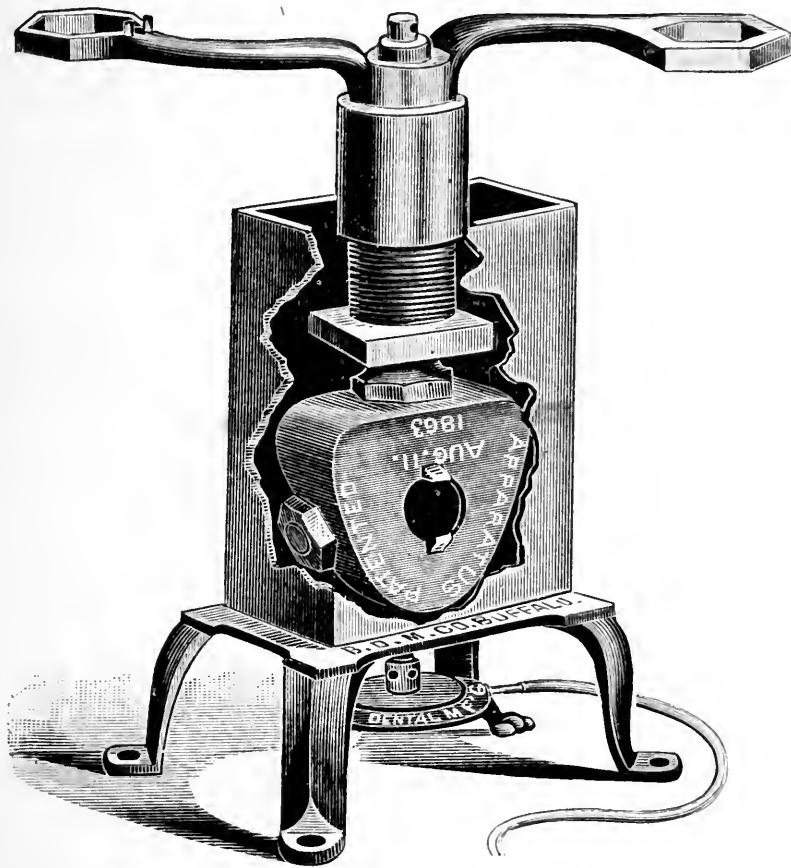
Either style makes a HANDSOME ORNAMENT IN ANY OPERATING ROOM.

PRICES.

Brass, lacquered,	\$45.00
Brass, nickel-plated,	50.00

BUFFALO DENTAL MANUFACTURING CO.

The Howell Rubber Packer.



THIS apparatus was brought to the notice of the dental profession, and a number of them sold, some twenty years ago. They are highly esteemed by those who use them and are acquainted with their merits.

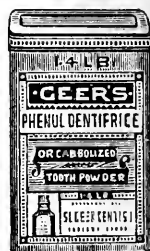
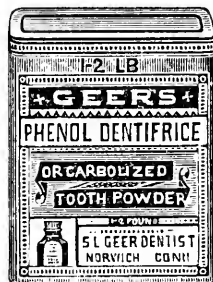
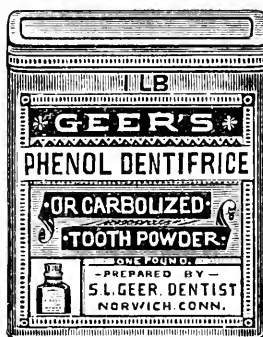
In the illustration, the side of the water-bath is broken away, showing the flask and injector in position. The flask is closed, without being packed; and the rubber is contained in the injector, to which the flask is screwed. The apparatus is then put in the water-bath, to which heat is applied. When the water is boiling, the rubber is injected into the flask by means of a piston operated by the screw and wrench, as shown in the engraving.

The advantages of this apparatus are, that a much closer articulation may be secured, and that there is much less risk of breakage of section teeth, when ground thin and set closely against the gum.

PRICES.—Howell Packer, complete, with one Flask and Gas or Alcohol Burner, \$15.00
Extra Flasks, 2.50

BUFFALO DENTAL MANUFACTURING CO.

GEER'S



Phenol * Dentifrice

OR

CARBOLIZED TOOTH POWDER.

To maintain the health of the **Mouth** and preserve the freshness and beauty of the **Teeth**, the frequent use of a dentifrice becomes indispensable. It is important to obtain an article free from obnoxious ingredients, the presence of which would surely cause numerous troubles, the origin of which is unsuspected.

The proprietor of Phenol Dentifrice recommends it to the notice of those not already acquainted with its long established merits. This preparation, which has been in the highest repute since its introduction in 1870, and sold to the **dental profession** throughout the **United States** by the leading **Dental Depots**, is a scientific combination of the finest materials, so united, chemically, as to insure the greatest efficiency and the best possible results upon the **MOUTH, TEETH and GUMS**.

The excellence of this Dentifrice, the formula of which originated with the proprietor, a dentist of thirty years' practice, has obtained for it the strongest recommendation of many of the professors in our **DENTAL COLLEGES**, as well as from those most noted in private dental practice.

As a **TOOTH POWDER** for General Use, by Old and Young, it stands Unrivalled.

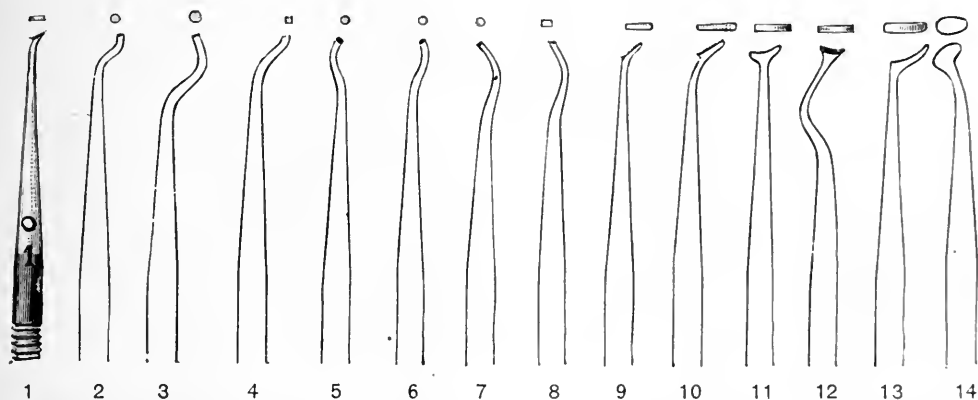
..... \$1.00 PER LB., IN 4, 1, ½ & ¼-LB. CANS

SOLD BY BUFFALO DENTAL MANUFACTURING COMPANY,
WHOLESALE AND RETAIL.

SET · “L” A · NEW · SET · OF SHORT · POINTS

• • FOR • THE • •

S^{NOW} · & · L^{EWIS} P^{LUGGER} · A^{UTOMATIC}



THE above selection of short Automatic Plugger Points has been subjected to a test of nearly two years, and are now brought out with the belief that they are the most completely practical set yet designed to meet all cases and situations. There is not a superfluous point in the set.

Particular attention is called to

• • • • • NUMBER · I 2 • • • • •

Which is especially designed for finishing and condensing the lingual portion of fillings in incisor teeth. This is a remarkably effective point. (The cut does not properly show the angles on this point.)

• • • NUMBERS · I 3 · AND · I 4 • • •

Are smooth, and are designed mainly to obliterate the marks of the serrated points. No. 13 for the six anterior teeth, and No. 14 for bicuspid and molars.

PRICES SET “L” AUTOMATIC PLUGGER POINTS.

❖	Nos. 1, 2, 3, 5, 6, 7, 13, 14,	each	\$0.50	❖
	Nos. 4, 8, 9, 10, 11, 12,	each	.75	
	Per set of 14,		\$8.50	

Dr. Hamlin Barnes's Prepared Gold

PATENT APPLIED FOR

For Lining Rubber Plates.

PURE GOLD is universally recognized as affording the most congenial surface known for contact with the mucous tissue of the mouth. The Rubber or Vulcanite base is as universally admitted to provide a fit superior to any other material not molded, as it is, to every inequality of the plaster model. Dr. Barnes's preparation is an *absolutely pure heavy rolled Gold*, and Vulcanite Plates lined with it by the method which he has devised, combine the best known contact surface with the most perfect fit, completely disposing of the most serious objection urged against the use of rubber as a base for artificial dentures. The time required for its application is, say, twenty minutes, and the method is so simple as to be readily comprehended by any dentist, from the directions which accompany each package of the material. The beauty of the work and its positive comfort to the wearer will solve the question of additional compensation. The rich, bright color of the Gold is not affected by the process.

Manufactured under the personal supervision of Dr. Hamlin Barnes, and put up in packages containing sufficient of the Prepared Gold to line the largest plate, with clear, concise directions for use.

PRICE PER PACKAGE, \$3.50.

THE S. S. WHITE DENTAL MFG. CO., Sole Agent.

BOW-SPRING AND No. 1 IMPROVED RUBBERS

• • • • • OBSERVE • THE • QUANTITY • PRICES • • • • •

BOW SPRING.		No. 1 IMPROVED.	
Less than 10 lbs., . . .	Per lb., \$2.75	Less than 10 lbs., . . .	Per lb., \$2.25
In 10-lb. lots, . . .	" 2.25	In 10-lb. lots, . . .	" 2.00
In 25-lb. lots, . . .	" 2.00	In 25-lb. lots, . . .	" 1.90
In 50-lb. lots, . . .	" 1.80	In 50-lb. lots, . . .	" 1.75

THE S. S. WHITE DENTAL MANUFACTURING CO'S PINK RUBBERS.

OUR No. 1 PINK is equal in desirable qualities (color and toughness) to the best Pink Rubbers now in the market, while we are able to quote it at a lower price than any of the best rubbers of other manufacturers. It has been on the market over a year, and has received very high commendations.

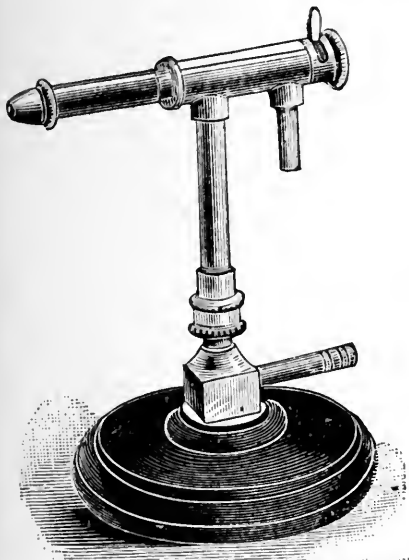
THE No. 2 PINK is a lower grade. It lacks the strength of the No. 1, but it will be found very satisfactory for facing. Put up in half-pound boxes.

PRICES: No. 1 PINK RUBBER, PER LB. \$5.00
No. 2 PINK RUBBER, PER LB. \$4.50

THE S. S. WHITE DENTAL MANUFACTURING COMPANY,
PHILADELPHIA, NEW YORK, BOSTON, CHICAGO, BROOKLYN.

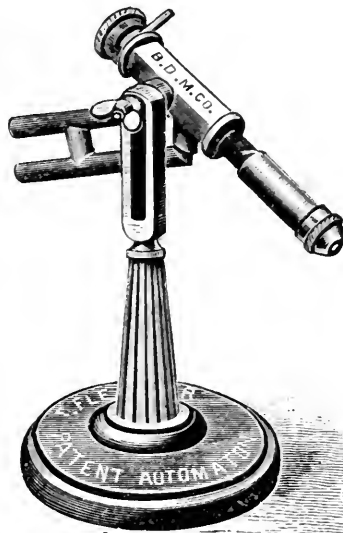
SOLDERING APPARATUS

• • • FOR GOLD CROWN WORK. • • •

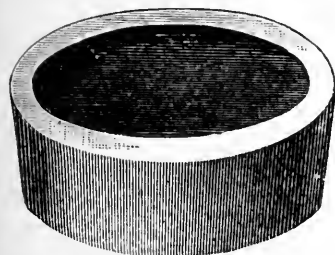


Automaton Blow-Pipe—No. 6 A.
Price, \$4.00.

The increasing use of the Richmond and other patterns of artificial crowns has created a demand for better appliances for soldering gold than have heretofore been in use in dental laboratories, and the articles here illustrated are presented as forming a complete outfit for the purpose. Two forms of the Automaton Blow-Pipe are shown. The No. 6 A is mounted on a ball-joint, situated immediately above the base, and is capable of motion in any direction. The No. 6 D is fastened to an upright by means of a thumb-nut. It can be removed and used in the hand when it is desirable to do so. The size of the flame is adjustable by means of the small lever shown at the butt end of the Blow-Pipe, which regulates the supply of both gas and air by the same motion, giving the most complete control of the heat.



Automaton Blow-Pipe—No. 6 D.
Price, \$4.50.



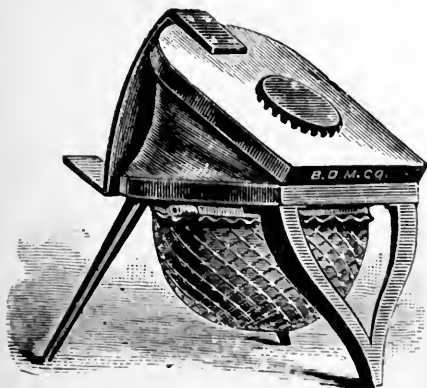
Carbon Block. Price, 25c.

The cupped ends of the Carbon Cylinders are admirable supports for the crowns while soldering. The Carbon Blocks are four inches in diameter, and the Cylinders $1\frac{1}{8} \times 3$ inches. They are perfect non-conductors, and much more cleanly to use than charcoal.

Price, 15c.



Carbon Cylinder.



Foot-Bellows—No. 9. New Style.
Price, \$5.00.

The No. 9 New Style Foot-Bellows is well adapted for furnishing the blast required for soldering. The elasticity of the rubber disk keeps a uniform pressure of air. The use of the Bellows will be found much preferable to furnishing the blast from the lungs.

For further description of these and other forms of Gas Blow-Pipes and Soldering Apparatus, send for our Price List of Fletcher's Laboratory Apparatus. Just issued.

Manufactured only by the

BUFFALO DENTAL MANUFACTURING CO.

THE ROBINSON • REMEDY

A SURE CURE FOR

PYORRHOEA, ALVEOLARIS, AND OBTUNDER FOR
SENSITIVE DENTINE.

PREPARED BY

SAM'L A. CROCKER & CO.,

(Successors to SPENCER & CROCKER,)

Ohio • Dental • & • Surgical • Depot,
CINCINNATI, OHIO.

DIRECTIONS.—Clean all the calcareous deposit from the teeth with a thin, sharp chisel, pushing the chisel always toward the apex of the tooth, and clear down to the alveola ridge; make a fine rope of fibers of cotton, by twisting it between the thumb and finger, a little larger than floss silk; cut the ropes into the length desired to go round the teeth to be treated, and do not treat more than four or five at one time; wet the ropes with the remedy and lay them on a napkin to absorb all that will come off, and place them round the necks of the teeth and push down thoroughly to the alveola border; when you have done one tooth do the next, and remove the rope from the first and so on until all are treated.

As a rule one application will cure. If the teeth are loose, take a fine binding wire and wire them to the adjoining teeth that are not loose; and in two or three days the pockets will all be closed and the teeth tight and well. For sensitive dentine and exposed pulps, wet a pledget of cotton and apply directly to the cavity—it will coagulate the serum in the tubuli and cut off all communication with the nerve, and the operation will be painless.

PRICE PER BOTTLE, 50 CENTS.

Something New Russell's Liquid Cement.

Prepared from Formula of Dr. R. Russell,

FOR REPAIRING RUBBER PLATES.

NO DOVETAILS NOR UNDERCUTS REQUIRED.

DIRECTIONS.—File the rubber plate down to a thin edge where it is broken, then coat the surface with the liquid cement and pack on your rubber, and vulcanize as usual. You will find the union of the two rubbers perfect. This will also be found useful in strengthening rubber plates that are very thin from excessive scraping. Roughen the part to be strengthened and apply the Liquid, then pack on the rubber and vulcanize. A trial will convince all of its merits.

• • PRICE PER BOTTLE, 50 CENTS. • • TRADE SUPPLIED. • •

FLETCHER'S

Carbolized · Resin

IS HIGHLY RECOMMENDED AS A SUBSTITUTE FOR CREOSOTE IN NEARLY
EVERY CASE; BEING MUCH MORE EASILY HANDLED, MORE EFFECTIVE
AND LESS DISAGREEABLE TO THE PATIENT THAN CREOSOTE, AND LEAVES

NO · ODOR · IN · THE · OPERATING · ROOM

IN making the application, gently clear the cavity without excavating, dry it with punk or absorbent cotton, and then apply carbolized resin on a small ball of cotton, sealing over with a very thin sheet of wax. The sealing is not absolutely necessary, as the CARBOLIZED RESIN IS ALMOST INSOLUBLE. In most, if not all cases of exposed nerve, a few applications will so entirely destroy the sensitiveness that the tooth may safely be filled without capping. It is an invariable specific for "tooth-ache," so-called. . . .

In addition to its other valuable properties, Fletcher's Carbolized Resin will be found to be the

* * MOST RELIABLE STYPTIC * *

in obstinate cases of bleeding. A plug of amadou or cotton, wet with Fletcher's Carbolized Resin and packed in the cavity, will stop bleeding instantly in cases where other remedies have failed.

PRICE, 25 CENTS PER BOTTLE.

If it Becomes Crystalline or Too Thick for Use, add a Few Drops of Chloroform.



COPAL-ETHER VARNISH.

FLETCHER'S COPAL-ETHER VARNISH IS MUCH BETTER
THAN SANDARAC VARNISH FOR ALL PURPOSES.

PRICE, 25 CENTS PER BOTTLE.

FOR SALE BY ALL DEALERS IN DENTAL GOODS.

JAMES V. LEWIS, No. 15 COURT STREET, BUFFALO, N. Y.

NITROUS THE LEWIS OXIDE

GASOMETER.



THE
Best and Most Convenient
FOR THE PRICE
YET PRODUCED.

Made of the Best Galvanized
Iron, highly and artistically
ornamented. All bright
parts nickel-plated.

IT IS FITTED FOR EITHER A 100
OR 500 GALLON CYLINDER.

Contains an effective Water Seal.

FOR SALE BY ALL DEALERS
IN DENTAL GOODS.

MANUFACTURED ONLY BY
BUFFALO DENTAL MFG. CO.,
Court St., corner of Pearl,
BUFFALO, N. Y.

SEND FOR
 CATALOGUES AND PRICE LIST
 OF THE
 LEWIS GASOMETER
 FOR
 NITROUS OXIDE GAS
 AND COMPLETE GAS OUTFITS.

The Lewis Gasometer has proved a great success, hundreds being sold every year since its introduction. It is artistic, serviceable, convenient and economical, and when fitted with our new

CHLOROFORM MIXER,
 makes the most effective "Vitalized Air" apparatus in the market.

Price, from \$25.00 upwards.

 OUR CATALOGUES GIVE PRICES OF SEVERAL STYLES OF OUTFIT.

SMITH'S DENTAL RUBBERS.

DEFIANCE: Vulcanizes in *One Hour*. Is *unsurpassed* by any rubber in the market for strength and durability.

PRICE, \$2.50 per lb.

FIFTEEN MINUTE: Is just the thing for *repairing purposes*.

PRICE, Reduced to \$2.50 per lb.

Either of above rubbers, 20 cents per sheet. I have a large and well selected assortment of *Dental Goods of all kinds*. Send in your orders for anything you need, and see how promptly they will be filled. ADDRESS:

FRED. W. SMITH,
 Dental Depot, BINGHAMTON, N. Y.

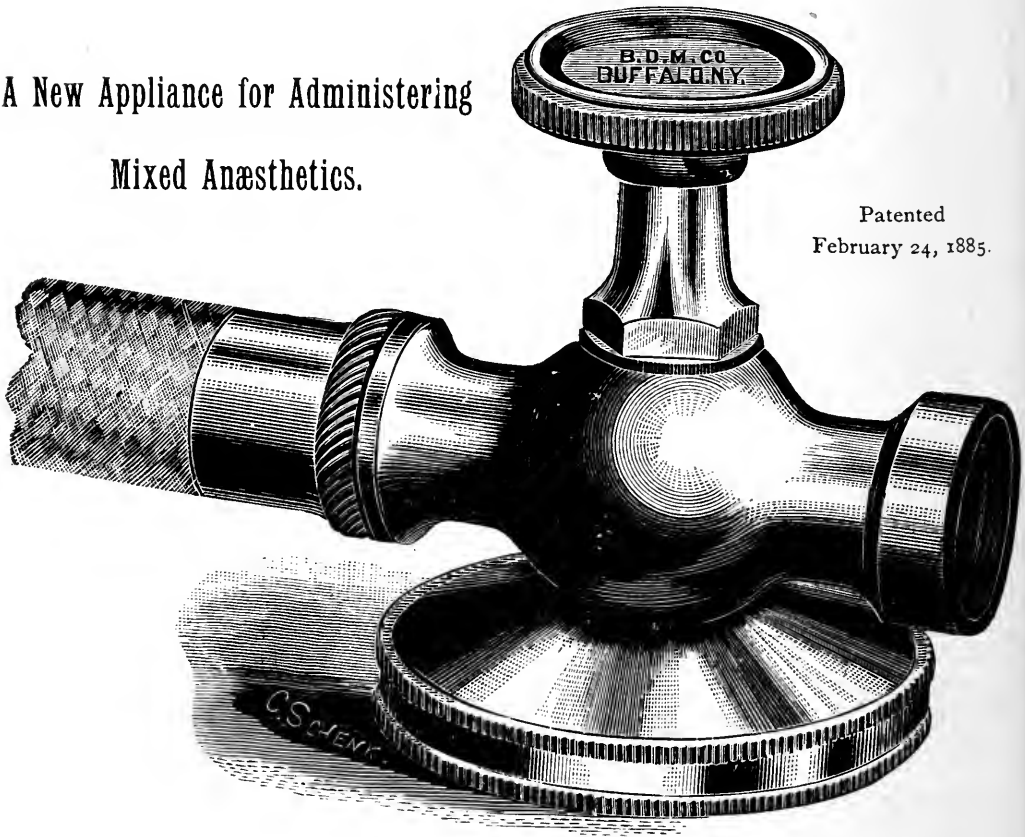
P. O. Box, 262.
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CHLOROFORM MIXER

FOR ATTACHMENT TO LEWIS GASOMETER OR
OTHER NITROUS OXIDE APPARATUS.

A New Appliance for Administering
Mixed Anæsthetics.

Patented
February 24, 1885.



The Buffalo Dental Manufacturing Co. offer to the Dental Profession, as an adjunct to the Lewis Gasometer, an apparatus which is believed to present some new and valuable features as compared to those heretofore used. The chloroform is confined in a receptacle below the gas passage, which is closed by a screw valve. A stem, covered by a fibrous sheath, extends downward from the valve into the chloroform. When the mixture is to be made, the valve is loosened by the wheel-handle, and drawn upwards, raising with it the covered stem, which brings with it a certain amount of chloroform into the gas passage, where it is exposed to the current of gas as it passes to the inhaler. A small piston closes the passage to the chloroform reservoir as the handle is raised, cutting off the escape of vapor. With this apparatus the mixture may be made or withheld, and more or less chloroform given, as the judgment of the operator may dictate. The Chloroform vapor **does not pass into the gasometer, but directly to the patient**, and by giving it when the patient is already partially under the influence of the gas, the effect of both is intensified, anæsthesia is prolonged, and a notable saving is made in the quantity of gas administered.

PRICE.

B. D. M. Co.'s Chloroform Mixer, for the Lewis Gasometer, \$6.00
Expense of adaptation to other styles of gas apparatus, \$1.00 to \$2.00 extra.

KING'S OCCIDENTAL AMALGAM.

PRICE REDUCED TO \$3.00 PER OZ.

This Amalgam has been before the profession in Ohio and Western Pennsylvania for some years, and all who have used or tested it agree that it has merits over any other Amalgam in the market.

The process of manufacture differs from that of other Amalgams, and

BY A NEW INVENTION

Dr. King is enabled to obtain better results, both in regard to COLOR, SHRINKAGE, and EXPANSION, than is obtained in any other alloy in the market.

Test for color consists of sixty grains of Sulphuret of Potassa, dissolved in one ounce of water. Amalgam plugs to be left in this solution twenty-four hours or more. The Occidental will remain bright after this test, and we know of no other Amalgam, at even double the price, but that will discolor. All who would use the best should buy

KING'S OCCIDENTAL AMALGAM.

TESTIMONIALS.

I believe the Occidental Amalgam has *no equal* in the market to-day.

PITTSBURGH, September 22, 1881.

GALE FRENCH, D. D. S.

I think the Occidental Amalgam superior to any I have ever used.

PITTSBURGH, September 22, 1881.

J. G. TEMPLETON, D. D. S.

ASK YOUR DENTAL DEPOT FOR IT, OR SEND TO

RANSOM & RANDOLPH, Wholesale Agents,

83 JEFFERSON STREET, TOLEDO, OHIO.

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

Give us your Subscription now for 1886.

OHIO STATE JOURNAL OF DENTAL SCIENCE

A Monthly Journal of 48 to 56 pages, for Two Dollars per Year.

Editor: GEO. WATT, M. D., D. D. S., Xenia, Ohio.

PUBLISHED BY

RANSOM & RANDOLPH,
TOLEDO, OHIO.

[ja86-1y] Subscriptions received by BUFFALO DENTAL MANUFACTURING CO.

Owing to the Constantly Increasing Demand

FOR



AND WITH

NEW FACILITIES FOR MANUFACTURING

I am enabled to announce the following

GREAT · REDUCTION

In Prices, which hereafter will be

4 cts. per Gallon in 100 Gallon Cylinders.

3½ “ “ 500 “ “

COMPLETE GAS APPARATUS OUTFITS.

	Former Prices.		Reduced to
Surgeon's Case, with 4½ gal. gas bag and 100 gal. Cylinder filled,	\$42.00	\$40.00	\$37.75
Surgeon's Case, with 7 gal. gas bag and 100 gal. Cylinder filled,	44.00	42.00	39.00
Univers. Tripod, with 4½ gal. gas bag and 100 gal. Cylinder filled,	36.00	34.00	32.75
Univers. Tripod, with 7 gal. gas bag and 100 gal. Cylinder filled,	38.00	36.00	34.50

SEPARATE PARTS.

Cylinder containing 100 gal. gas, . . .	\$16.00	\$15.00	\$14.00
“ “ 500 “ . . .	44.00	42.00	39.50
Re-filling 100 gal. Cylinder,	6.00	5.00	4.00
“ 500 “ per gal. 3½c. . . .	22.50	20.00	17.50

I continue to REFILL Cylinders of ALL
MAKES, as well as to GUARANTEE the KEY-
STONE VALVE, and the WEIGHTS of the
Cylinders as marked ON THE LABELS

Dentists having EXPERIENCED TROUBLE
and LOSS OF GAS through FAULTY valves,
will find it to their ADVANTAGE to have them
REPLACED by the KEYSTONE valve at a
nominal cost.

PHILADELPHIA, PA., April 1, 1885.

H. D. JUSTI,

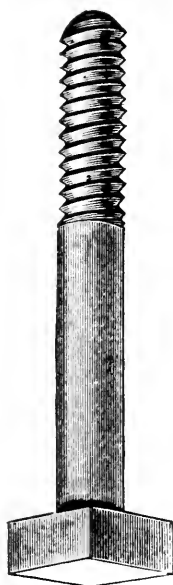
———— DENTAL DEPOT, —————

No. 516 Arch St., - Philadelphia, Pa.

BRANCH: 66 E. MADISON ST., CHICAGO, ILL.

Sole Agent for the Keystone Gas Regenerating Co.

Flask • Bolts.



Whitney Old Style.



Whitney New Style.



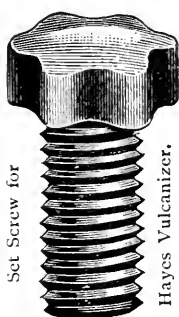
Whitney Slot.



Hayes Clamp.



"Star."



PRICES.

Whitney Old Style,	per set of 3, . . .	18 cents.
Whitney New Style,	" " . . .	25 "
Whitney Slot, (or Brown's Vulcanite,)	" " . . .	25 "
Star Bolt, for S. S. W. D. M. Co.'s Star Flask,	" " . . .	30 "
Hayes Clamp Bolts,	" " . . .	25 "
Brown's Celluloid,	" " . . .	50 "
Hayes Set-Screw for Screw-Collars,	" " . . .	25 "

REPAIRS ON VULCANIZERS.

We frequently receive parts of Vulcanizers for repairs, and sometimes are obliged to send for the remaining parts before we can be certain that we have put the apparatus in satisfactory condition. It is best in all cases to return all the parts of the Vulcanizer, so that it can be tested and made steam-tight before it is sent from our hands. If a new screw-collar is wanted the pot should be sent, that the thread may be well fitted; and the cap that the Vulcanizer may be tested. If a pot leaks and requires brazing, the only positive knowledge of its being steam-tight after the repairs are made is to be gained by screwing on the cap and testing it by steam.

If dentists and dealers will bear these facts in mind, they will save themselves much annoyance, and at times some extra expense.

BUFFALO SHEET WAX.—A superior quality of sheet wax and gutta percha and wax, for base-plates; also gutta percha and wax, and pure wax in cakes for impressions. The trade supplied at satisfactory rates.

PRICES.

Sheet Wax, for base-plates, per half-pound box,	50 cents.
Sheet Gutta Percha and Wax, for base-plates, per half-pound box,	50 "
Wax in cakes, for impressions, per half-pound box,	50 "
Gutta Percha and Wax in cakes, for impressions, per half-pound box,	50 "

BUFFALO DENTAL MANUFACTURING CO.

IF YOU WANT

FORCEPS—CORRECTLY MADE,
EXCAVATORS—KEEN CUTTING AND WELL TEMPERED,
PLUGGERS—ALL KINDS, FINELY SERRATED,
AMALGAM INSTRUMENTS—EVERY KIND,
BONWILL ENGINE PLUGGER POINTS,
ELECTRIC Mallet PLUGGERS,
AUTOMATIC PLUGGER POINTS PROPERLY FITTED,
ENAMEL CHISELS THAT WILL DO THEIR WORK,
RUBBER DAM FORCEPS AS THEY SHOULD BE,
FOIL CARRIERS—ALL KINDS,
ENGINE BURS—BEST QUALITY, OR
REPAIRING CAREFULLY ATTENDED TO,

SEND TO

LUKENS & WHITTINGTON,

DENTAL INSTRUMENT MANUFACTURERS.

626 RACE STREET, - - PHILADELPHIA, PA.

LAWRENCE'S AMALGAM.

“THE OLD RELIABLE.”

This Amalgam has received the endorsement of the Profession at large for over forty years, which would seem to render any remarks as to its excellence superfluous. Retail price, Three Dollars per ounce.

Purchase only of reliable dealers, their agents, or of the inventor and only manufacturer,
AMBROSE LAWRENCE, 476 Columbus Ave., Boston, Mass.

Low's Counter-Irritant Dental Plasters.

The application of counter-irritants to the gum, in the form of a plaster, has some advantages over the ginger or pepper bag, as the plaster can be made to adhere to the gum, and is less bulky. It will, therefore, easily retain its place, and the effect will be more prompt and certain, the action of the remedies not being interfered with by a constant wash of saliva.

It is questionable if one degree of stimulation should be expected to answer the purpose equally well for all stages of pericemental inflammation, and in order to meet the varying indications which are presented, three different plasters have been devised, as follows:

PLASTER NO. 1 is a very mild stimulant, suitable rather for warding off threatened inflammation, than for reducing it when present. It is recommended for use after filling pulpless teeth or setting artificial crowns.

PLASTER NO. 2 is a more rapid stimulant, composed of capsicum, and is applicable to all cases when it is desired to bring about resolution instead of hastening suppuration.

PLASTER NO. 3 is a Mustard Paste, and is by far the best application when suppuration is inevitable and the desire is to hasten the discharge and relieve the patient.

Each bunch of six plasters is wrapped in tin-foil to prevent deterioration by exposure to the air, making a convenient package for the patient.

They are put up in boxes containing nine dozen of either kind or assorted. Price, \$1.00 per box.

Prepared by DR. F. W. LOW, Attica, N. Y.

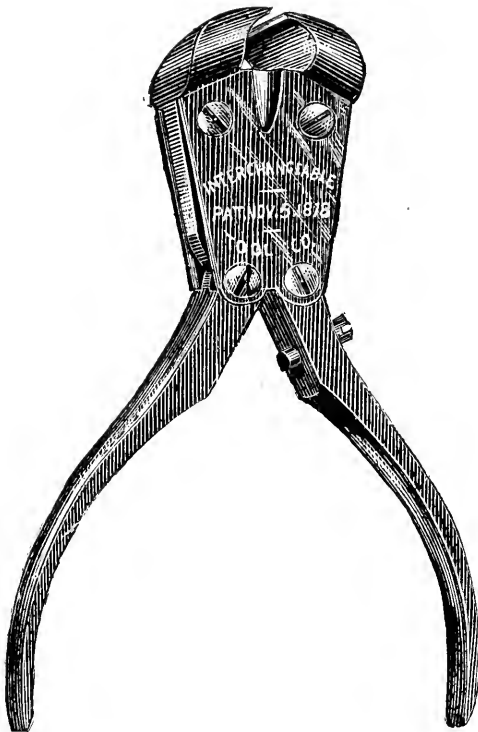
BUFFALO DENTAL MFG. CO., General Wholesale Agents.

HALL'S PATENT CUTTING NIPPERS

These Nippers are constructed with compound levers, which greatly increase their power and ease of operation. They are of first-class workmanship, strong, durable, and all the parts interchangeable. Extra jaws can be supplied in the event of breakage.

PRICES.

No. 1 size, 4-in. Nippers, each, . . .	\$1.00
No. 2 " 5 in. " " . . .	1.20
No. 3 " 7 in. " " . . .	1.75
No. 1, Nickel-Plated,	1.25
No. 2, "	1.60
No. 3, "	2.25



SAW FRAME.

TWEEZERS.

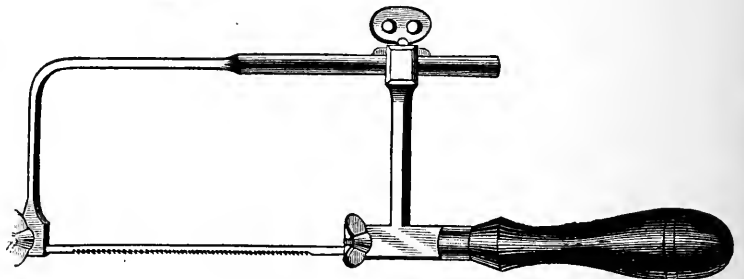
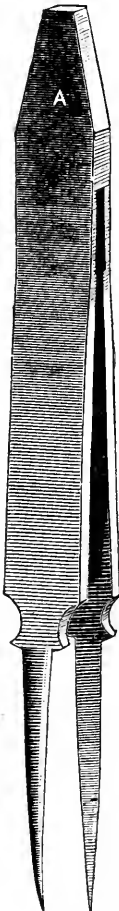
FOR

SOLDERING,

With fine slim points.

PRICE.

Each, . . 25c.



ONE-FOURTH SIZE.

Rosewood handle, finely finished, American make; a better article and much stronger than the Swiss.

PRICES.

Saw Frame,	\$1.00
" " Nickel-Plated,	1.25

FINE FRENCH FILES.

THE BUFFALO DENTAL MANUFACTURING Co. keep in stock a large and varied assortment of fine French files of all sizes, lengths, shapes and cuts. These files are first-class in every respect, and are suitable for gold plate work, or fine brass and steel work.

TWIST DRILLS, AND DRILL CHUCKS.

of all sizes. Special sizes made to order.

SOLID-DRAWN BRASS ROD.

from one-fourth inch to seven-eighths inch diameter, any length. Brass Tubing of all sizes. Prices of the above on application.

JUST THE THING! NEW! NICE! PRACTICAL!

EVERYBODY IS USING THEM.

DENTAL CAPSICUM PLASTERS

PAT'D FEB. 9, 1886.

Made of the same ingredients as the popular "pepper bag," and are more effectual; very cheap; nicely flavored; soft and flexible; with thick felt back; will stick to the gums; will not dissolve in the mouth or impregnate the saliva with pepper; smart only on the gums; gotten up in nice style, and pleases everybody.

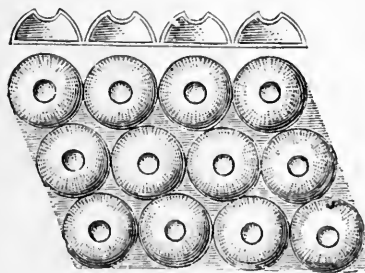
For securing resolution or suppuration in inflammatory conditions of the pericemental membrane, and for the relief of all pulp irritation, they have no equal.

Sent to any address, Six Dozen for \$1.00.

Prepared by FRANK B. DARBY, D. D. S.,

126 East Water Street, ELMIRA, N. Y.

[oct-85-1y.] FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.



Surface Cohesion Forms for Artificial Dentures.

A system by which Artificial Dentures can be made much smaller, and hold firmly, as the cohesion extends over the whole surface of the plate, instead of only at one point as in the central air or suction chamber. By the use of the *Surface Cohesion Forms* the sense of taste is not impaired nor is there any irritation. The inner surface of the plate will be covered with semi-oval projections (as seen in cut enlarged four diameters) the whole length of the plate, which causes it to stick to the gums as if it were glued, and without causing any irritation of the membrane.

The *Surface Cohesion Forms* are cemented on the cast, with liquid rubber, the *Surface Form* being correspondingly cut; after the wax is boiled out, and flask packed, the flask is screwed together, and when vulcanized, the palatal surface of the plate will be covered with semi-oval projections its entire length, and with a beautiful clean finish. For gold, platinum or any metal, cement the "surface cohesion form" to plaster cast, mould in sand, make three zinc dies, and lead counter dies and swag up plate.

SURFACE COHESION FORMS, put up neatly in boxes of one dozen, with full directions, \$1.00

Liquid Rubber, per bottle, 35 cents; per dozen bottles, 4.00

For sale at all Dental Depots.

* A method of preparing Rubber plates for the vulcanizer without waxing or flasking. Full instructions furnished for \$5.00 on application to

Dr. J. SPYER, 245 East 19th St., New York City.

PHILADELPHIA, July 13, 1885.—The undersigned have witnessed a satisfactory clinic given by Dr. Spyer of his new method of constructing vulcanite plates.

S. H. GUILFORD, D. D. S.

FRANK R. FABER, D. D. S.

THEODORE F. CHUPEIN, D. D. S.

CHAS. F. BONSALE, D. D. S.

A. P. BEALE, D. D. S.

H. M. SHEPPARD, D. D. S.

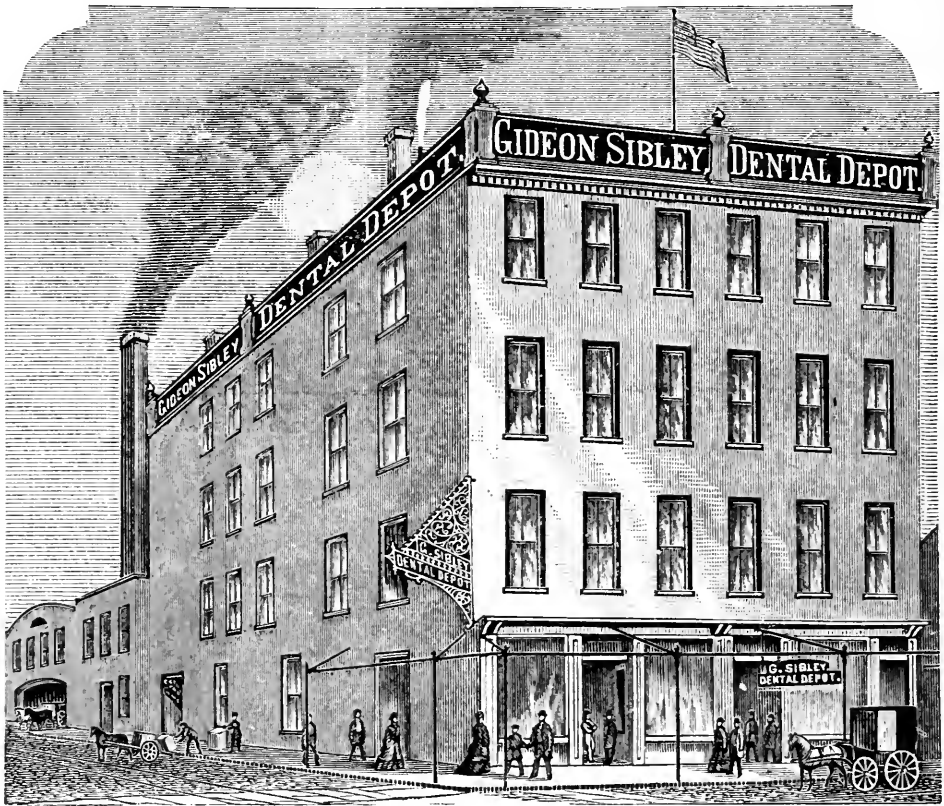
THOMAS W. BUCKINGHAM, D. D. S.

GEO. W. CUPITT, D. D. S.

[oct-85-1y.]

GIDEON SIBLEY,
MANUFACTURER OF
ARTIFICIAL TEETH
AND DEALER IN
DENTAL SUPPLIES,

THIRTEENTH AND FILBERT STS., - - PHILADELPHIA, PA.



It is gratifying to find, that after years of assiduous labor to produce the best Tooth made, their superiority is so universally acknowledged, and the rapid demand for them has necessitated large additions to our factory and salesroom.

POINTS ON WHICH WE SEEK COMPARISON:

*STRENGTH, NATURAL SHAPES, TEXTURE, COLORS, LARGE DOUBLE-HEADED
PINS, &c., COMBINED WITH OUR VERY LARGE ASSORTMENT
OF MOULDS AND VARIETY OF SHADES.*

ASK YOUR DEALER FOR THEM, OR SEND ONE DOLLAR FOR A SAMPLE SET.

FOR SALE BY BUFFALO DENTAL MFG. CO.

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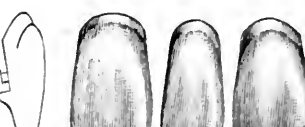
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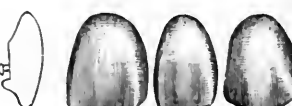
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110



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GIDEON SIBLEY,
 MANUFACTURER,
 13th and Filbert Streets,
 PHILADELPHIA, PA.

93

Coolidge's Gas Regulator

FOR DENTAL VULCANIZERS.

[Patented October 31, 1871.]

FOUR · YEARS · OF · CONTINUED · USE · PROVES · ITS · VALUE.



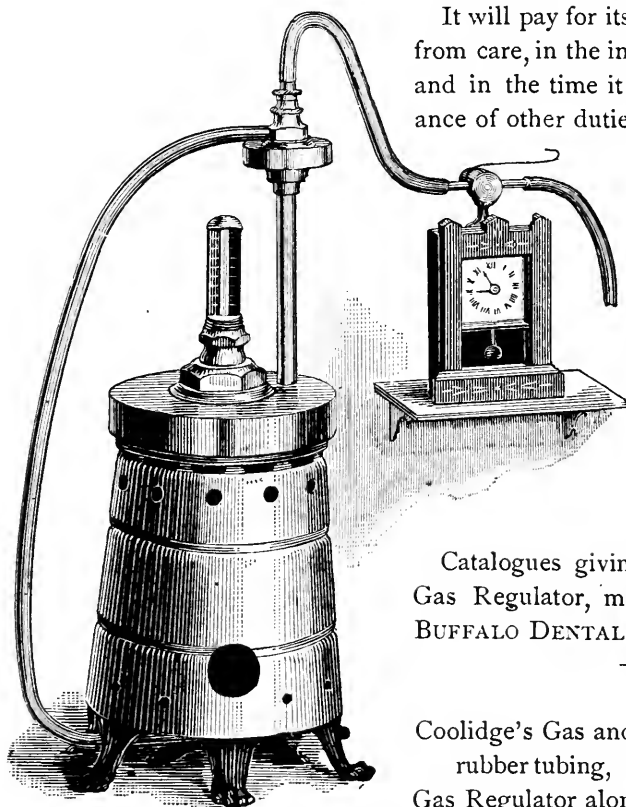
IT RELIEVES THE DENTIST ENTIRELY FROM THE
CARE OF THE VULCANIZER, AND WILL BE FOUND A



PERFECT SAFEGUARD AGAINST EXPLOSIONS.

Being operated by steam pressure, it is more sensitive and accurate in its operation than the thermometer, which is operated by the conduction of heat through the body of the vulcanizer. As a consequence, it secures *superior and uniform results in vulcanizing*.

It will pay for itself many times over in the freedom from care, in the immunity from dangerous explosions, and in the time it gives the operator for the performance of other duties.



The cut-off valve is operated by the clock, giving complete control of the time of vulcanizing, as well as the temperature.

The two devices are wholly independent, as will be seen by reference to the illustration. They are made entirely of metal. No rubber is used about them in any form, except as connecting tubing, as experience has shown it to be wholly unreliable.

Catalogues giving a full description of Coolidge's Gas Regulator, mailed free upon application to the BUFFALO DENTAL MANUFACTURING CO.

PRICES.

Coolidge's Gas and Time Regulator, with 3 ft.	
rubber tubing,	\$10.00
Gas Regulator alone,	5.00
Extra Rubber Tubing, per ft.,	12 cts.

TESTIMONIALS.

BATH, N. Y., March 4, 1886.
* * * The only trouble I have with my Gas Regulator is, that I am disgusted with myself that I did not get it long ago.
A. OSGOOD.

EASTON, Pa., March 16, 1886.
Gentlemen—Have used the Coolidge Gas Regulator for over a year, and think it fills a long-felt want. Would not be without it.
Yours respectfully, T. F. KING.

MONTCLAIR, N. J., March 25, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—In November, 1882, I purchased a Coolidge Gas and Time Regulator, which has been in constant use ever since, and has never failed to do its work, and has needed no repairs. It enables me to vulcanize at any time, and at the same time give attention to other work without having to watch my vulcanizer.

Respectfully,

A. J. WRIGHT, D. D. S.

No. 12 COURT ST., BUFFALO, N. Y., March 24, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—I embrace this opportunity to say that for the past year I have been using one of your Gas Regulators for vulcanizing with no small amount of satisfaction both as to the uniform character of the vulcanized rubber, and the relief to my mind in throwing off all anxiety as to the vulcanizing process while otherwise engaged in the office. Believing that the employment of such an appliance would be a source of great comfort to many who persist in vulcanizing to accordance to the "old method," I am,

Gratefully yours,

S. A. FREEMAN.

581 BROAD ST., NEWARK, N. J., March 7, 1883.

BUFFALO DENTAL MFG. CO.:

Gentlemen—The Coolidge Gas and Time Regulator bought of you works very nicely indeed. It regulates the temperature perfectly during the process of vulcanizing, requires no watching, and in fact is indispensable in every dental laboratory. Yours,

G. S. WENDELL.

NEW YORK, March 21, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—I have been using a Coolidge Regulator ever since their introduction, and take great pleasure in testifying to their usefulness in vulcanizing. I think every well regulated laboratory should be supplied with one where the vulcanizer is used.

Very truly,

FREDERICK H. LEE.

PALMER'S DENTAL INSTITUTE, 258 GRAND STREET, NEW YORK.

BUFFALO DENTAL MFG. CO.:

Gentlemen—Having had in constant use for the last three months one of Coolidge's Gas and Time Regulators for Vulcanizers, we have found it to answer the purpose admirably, and now find it almost indispensable. This device for the uniform maintenance of heat is so complete and thorough that one has only to give it a trial in order to be convinced. The trusting to boys or even one's self is attended with so many mishaps, that the Regulator, in our opinion, should be attached to every vulcanizer.

Yours respectfully,

W. L. DRUMMOND, Manager.

JERSEY CITY, March 18, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—The Gas Regulator I have used constantly for one year, and it has given entire satisfaction, so much so that I would not do without it, not for four times its cost. In running my vulcanizer now I feel entirely safe, and would recommend it heartily to all.

Yours,

G. M. MERRITT.

No. 8 E. Fourth St., NEW YORK, March 20, 1886.

BUFFALO DENTAL MFG. CO.:

Gentlemen—I have used your Regulators since 1882, and I am glad to have the opportunity to express my great satisfaction as well as warmest praise. Before I used them, I never felt at ease. In fact, an anxiety for the safety of my assistants as well as myself was always present, a feeling which was very much intensified by two explosions. But now I can rest in peace. I feel sure that no accident can happen, and, to express my opinion warmly, no dentist should be without one.

Respectfully,

WM. MICHAELIS.

SAMSON RUBBER

MANUFACTURED BY

EUGENE DOHERTY,

Nos. 417 & 419 Kent Ave., Brooklyn, E. D., New-York.

WARRANTED TO BE

THE STRONGEST AND MOST UNIFORM RUBBER MANUFACTURED.

It is the TOUGHEST and Most Durable Rubber Made. Vulcanizes same as Ordinary Rubber.

TO DENTISTS,
IN LOTS OF
TEN POUNDS
AT ONE TIME,
10 PER CENT. OFF
RETAIL PRICE.

SAMSON RUBBER.



MANUFACTURER OF ALL KINDS OF

DENTAL RUBBERS AND GUTTA PERCHAS.

PRICE LIST OF DENTAL RUBBERS AND GUTTA PERCHAS.

No. 1 Red Rubber, per lb.,	\$2.25	No. 1 Red Weighted Rubber, per lb.,	\$4.00
No. 2 Red Rubber, per lb.,	2.25	No. 2 Red Weighted Rubber, per lb.,	4.00
Samson Rubber, per lb.,	2.75	Black Weighted or Amalgamated	
Black Rubber, per lb.,	2.25	Rubber, per lb.,	4.00
Flexible or Palate Rubber, per lb., .	2.75	Weighted Gutta Percha, per lb., . .	4.00
Gutta Percha for Base Plates, per lb.,	2.25	Adamantine Filling or Stopping, per	
Vulcanite Gutta Percha, per lb., . .	3.50	oz.,	4.00

NOTE.—The above Rubbers and Gutta Perchas will be furnished in pound or half-pound packages to any Dentists in the country on receipt of price, and stating that they cannot get them at the Dental Depots in or near their place of business. Circulars giving full instructions how to use all of my Rubbers and Gutta Perchas, will be found in each box or package with the article ordered.

EUGENE DOHERTY, 417 & 419 Kent Ave., Brooklyn, E. D., New York.

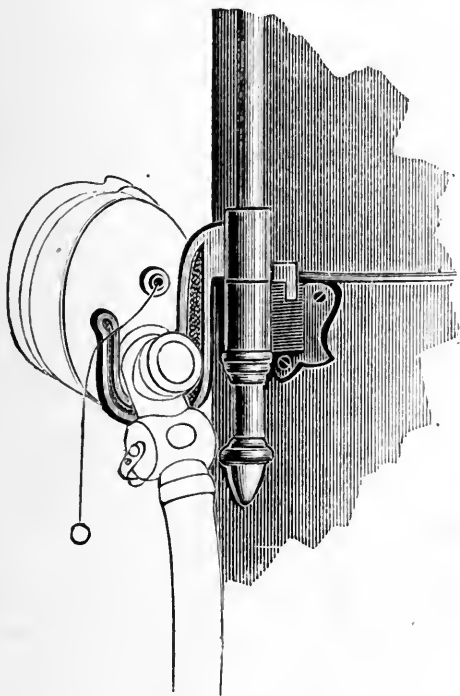
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FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

INHALER SUPPORT

FOR ATTACHMENT TO

Lewis • Gasometer



The above illustrates a hook to be slipped on one of the upright guide rods of the Lewis Gasometer, for holding the Mouth-piece or Inhaler when not in use. The hook will hold any Inhaler in the market, and can be attached to any gasometer of our manufacture. It will be found a great convenience.

PRICE.

Inhaler Support, nickel-plated, . . 50 cts.

FOR SALE CHEAP.

A WILKERSON DENTAL CHAIR, in first-class condition. Has been covered with ties, and is as good as new. Price, \$125.

Also, S. S. WHITE BRACKET with Allan Table, in good order, \$15.

S. S. WHITE DENTAL ENGINE, latest improved, with cone journal hand-piece, No. 6, in good order, \$30.

Address, W. W. TERRY,
SALAMANCA, N. Y.

• CAUTION! •

OUR attention has lately been called to the fact that imitations of some of the accessories of our vulcanizing apparatus have been put on the market; and some of them, unfortunately, are of such poor quality that they cannot possibly be anything but a disappointment to the purchaser. This is especially the case with the Whitney and Hayes Packings. Samples of the former, which we have seen, are utterly worthless, and the latter is of very inferior quality.

Our Laboratory Gas Burner has also been widely imitated; and as the parties making them are not conversant with the principles involved in making a good gas burner, the imitations are not satisfactory to the user, and we have to take the blame. We therefore repeat the notice given heretofore, that our flasks and our Laboratory Gas Burner have our firm name, or the initials, B. D. M. Co., cast or stamped upon them; our flask bolts are put up in wrappers bearing our imprint, and hereafter our Whitney and Hayes Packings will be stamped with our firm name.

BUFFALO DENTAL MFG. CO.

ANOTHER "NEW DEPARTURE."

Educate your Patients. Teach them that the possession of a good set of teeth rests very largely with themselves — which is true. A SENSITIVE POINT will do this, if read by your patrons, thereby saving you valuable time and great annoyance. It was written after thirty years' successful dental practice, and will introduce the subject now too long neglected by our profession. It answers questions, makes suggestions, and gives advice to our patients on matters relating to the teeth. Send 10 cents for the book (32 pages) and terms. 1,000 copies free, printed in your own name. *It will pay you to investigate this subject.*

CHAS. HOUGHTON, Dentist,
BATAVIA, N. Y.

GRAY.
YELLOW.
PRICE, \$2.00.
MEDIUM.
LIGHT.

TWO COLORS.—Gray and Yellow, \$1.50 per Package.

ONE COLOR.—Gray, Medium, Yellow, or Light, 1.00 “ “

THIS COMPOUND NOW STANDS WITHOUT A RIVAL. From Five to Seven Years' Test by leading Dentists throughout the World has proved it to be all that has been claimed for it.

FOR MOUNTING ARTIFICIAL CROWNS—It has been highly recommended, is non-irritating, non-conducting, and in harmony with tooth structure.

IT WILL HARDEN IN WATER OR SALIVA. It does not deteriorate with age. We have some over THREE YEARS OLD, and it works as nicely as when first made. The liquid does not crystallize, and we have increased the quantity in all packages. All bottles are lettered with “CAULK'S DIAMOND CEMENT.”

The Universal Verdict is that CAULK'S DIAMOND CEMENT IS THE BEST. A Fair Trial will convince you.

.. CAULK'S . PAR . EXCELLENCE . ALLOY ..

THIS GOLD and PLATINA ALLOY IS MANUFACTURED on a NEW PRINCIPLE. SAVES TEETH WHERE OTHERS FAIL.

It is the result of a long series of experiments, and has been in constant use for several years. By our new method of manufacture there is no GUESS WORK, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

PRICE, in 1-3, 1-2 and 1 oz. packages, per oz., \$3.00; 2 oz., 5.00.

.. CAULK'S . WHITE . ALLOY ..

HAS BEEN GREATLY IMPROVED, COSTING MORE TO PRODUCE IT. THERE IS NOTHING EQUAL OR SUPERIOR TO IT.

Is of a peculiar grayish-white color. When amalgamated in the hand it works with a soft and velvety feeling. Is very DENSE, and so malleable that it can be malletted with the greatest ease. Has been highly recommended in Combination Fillings of Gold and Amalgam. When properly manipulated with PURE MERCURY it will retain its color under all circumstances.

PRICE, in 1-4, 1-2 and 1 oz. packages, per oz., \$4.00; 2 oz., \$7.00.

.. CAULK'S . DIAMOND . POINT . STOPPING ..

This form of Gutta-percha having been in the market for several years, has stood the greatest test of all—that of time. It is regarded as the best preparation of its kind for filling teeth in the world.

The stopping is put up in *sealed envelopes*, and the Pellets and Cylinders in *sealed boxes*, each bearing a fac simile of our signature.

PRICE, in 1-8, 1-4, 1-2 and 1 oz. packages, per oz., (reduced to) \$2.00.

We make a Specialty of Manufacturing these Materials for Filling Teeth, and they are Sold by Troy Weight.

OVER FIFTEEN THOUSAND (15,000) Dentists are using these materials throughout the world. What better evidence do you wish of their Superiority and Excellence.

L. D. CAULK, Manufacturer & Proprietor, CAMDEN, Delaware.

SOLD AT ALL DENTAL DEPOTS.

• ENDLESS • VULCANIZER PACKING.

There has been some demand for an endless packing for the Whitney Vulcanizer, and we have at last succeeded in obtaining some, equal in quality and similar in structure to the packing strips commonly used. There are rubber rings sold as endless packing, which are wholly unsuitable for the purpose. These can be relied upon as a good article.

PRICE, . . . 8 CTS. EACH.

AKRONDENTAL • RUBBER.

The material of which this Rubber is composed is prepared by a new process, which insures

ABSOLUTE PURITY,
RESULTING IN A PRODUCT OF
 WONDERFUL
DENSITY • FINENESS • AND • STRENGTH.

It is especially designed to meet the requirements of those who seek to produce the most perfect and artistic work. It is exceedingly tough and light, and takes a beautiful polish. Plates may be made very thin without splitting or crumbling away about the edges. It can be used with the best results for making

PARTIAL LOWER DENTURES,
 an advantage which no other rubber possesses. It has the unqualified approbation and endorsement of the profession everywhere, and never fails to give satisfaction.

PRICE, \$3.00 PER POUND.

For Sale by BUFFALO DENTAL MFG. CO.

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Are similar to the above, but are *fully Cohesive*. They also have the quality of toughness, so the *plugger point carries the gold before it* instead of cutting through. It is claimed for them that they possess, in the highest degree so far known, the

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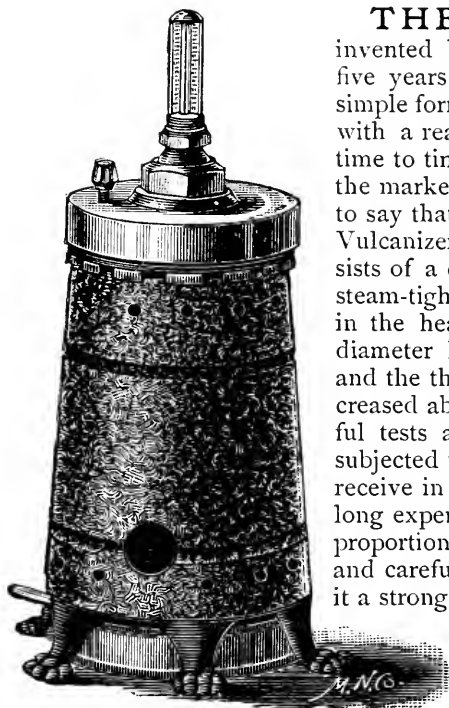
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invented by the late Dr. B. T. Whitney more than twenty-five years ago, has always had the name of being the most simple form of vulcanizer in existence, and it has always met with a ready sale. Attempts which have been made from time to time by different parties to place imitations of it upon the market, have met with very limited success, and it is safe to say that there are to-day more of the genuine Whitney Vulcanizers in use than of all other kinds together. It consists of a copper pot on to which a brass head is screwed, a steam-tight joint being made by means of a rubber packing in the head, which bears upon the edge of the pot. Its diameter has recently been enlarged from $3\frac{7}{8}$ to 4 inches, and the thickness of copper used in making it has been increased about one-third, thus insuring ample strength. Careful tests are given to each one as it is made, and each is subjected to a pressure of steam far above that which it would receive in use, and is afterwards thoroughly inspected. Our long experience in the manufacture of vulcanizers, the proper proportion of material in its different parts, and the accurate and careful workmanship bestowed upon it, combine to make it a strong, safe, durable and easily-managed machine.

HAYES' PATENT MERCURY BATH is applied to this vulcanizer, by which the bulb of the thermometer is protected from the destructive action of the steam upon it, and one of the most frequent causes of failure of the thermometer entirely obviated. It is also fitted with the B. D. M. Co.'s safety apparatus and safety disc, which will give way and allow the escape of the steam, if the temperature of the vulcanizer should be allowed, by forgetfulness or oversight, to rise to a dangerous extent. The pressure being thus relieved, a disastrous explosion becomes impossible.

The Whitney Vulcanizer is closed by means of two wrenches, the "round" and "straight" wrenches, (Nos. 3 and 8). These form the most convenient means for the purpose, for the traveling dentist. For those having a regularly appointed laboratory, the bed-plate and wrench, (Figs. 9 and 10) are recommended. The bed-plate is fixed to the bench, in which a hole is cut for the reception of the vulcanizer pot. These are furnished with the vulcanizer instead of the round and straight wrenches, Nos. 3 and 8, without any advance in price. If a hole in the bench is not practicable, the Raised Bed-Plate (No. 16) will be furnished at an advance in price of 75 cents.

The heat is supplied by either gas, alcohol or kerosene. Apparatus for burning either is furnished as required.

We have succeeded in effecting arrangements with the manufacturers by which we are enabled to furnish a SPECIAL PATTERN OF KEROSENE STOVE with our vulcanizers, without the advance in price heretofore made in furnishing the Union Stove. This stove has a four-inch wick and will be found an efficient heater, much preferable to those heretofore used. This stove will always be furnished with this vulcanizer, unless other heating apparatus is specified. The Union Stove, if ordered, will be \$1.25 extra, as before.

PRICES.

No. 1, Vulcanizer, for one flask, Gas, Alcohol or Kerosene,	\$12.00
No. 2, Vulcanizer, for two flasks, Gas, Alcohol or Kerosene,	14.00
No. 3, Vulcanizer, for three flasks, Gas, Alcohol or Kerosene,	16.00
No. 1, Vulcanizer, with Union Kerosene Stove,	13.25
No. 2, Vulcanizer, with Union Kerosene Stove,	15.25
No. 3, Vulcanizer, with Union Kerosene Stove,	17.25

THE DENTAL ADVERTISER.

VOL. XVII.—BUFFALO, N. Y., OCTOBER, 1886.—No. 4.

“MUCH OR LITTLE WATER IN VULCANIZING?”

I noticed recently in one of our leading dental offices that in vulcanizing a case the boiler was filled nearly to the brim with water. If those who still follow that method would put but a half-dozen spoonfuls in a steam-tight boiler, even placing something under the flask to keep it from the water, they may discover three advantages in the device: a tougher plate; absence of much disagreeable odor, and models and investments disintegrated. Give a little longer time for vulcanizing by this method. Those who offer new machines for accomplishing this purpose may not thank me for this suggestion.—*Dr. F. W. Williamson, Redwing, Minn., in Items of Interest.*

The above clipping gives advice which is right in one sense, and wrong in another. A series of recent experiments not yet fully completed, seems at this time to raise a serious doubt as to whether a piece of rubber vulcanized in steam and above water can be distinguished by its texture from another piece of the same rubber, properly vulcanized under water. The caution extended to “give a little longer time for vulcanizing,” gives the clue to the superior qualities, if any there be, to the steam-vulcanized product. The mixture of air and steam, usually included in a “steam-tight” boiler, is not so good a conductor of heat as is pure steam. The flask will not be as hot by several degrees when resting in the steam-space as when placed under water, and it is undeniably the fact that a low temperature and long time produces the best results in vulcanizing. Hence, if two flasks are placed in the same vulcanizer, one in the water and one in the steam-space, there will be quite a difference in the quality of the

rubber vulcanized in them, both being subjected to the same time, and apparently the same heat.

Some of the first dental vulcanizers made, dating very early in the sixties, consisted of a boiler with a separate vulcanizing chamber above it, the flasks being thus placed in an atmosphere of steam, all condensation at once descending to the boiler. It was deemed a long step in advance when it was found that a single-chamber vulcanizer would answer all purposes, the vulcanization being done as well under water as in steam.

It is probable that the practice of covering the flasks with water arose from its being found that there was less difference in the hardness of the rubber in the different flasks when this was done. It is a well-known fact that such a difference exists, and is quite noticeable when the contents of the upper and lower flasks are compared, when three flasks are put in the vulcanizer, one above the other, even when all are covered by water. The reason for this difference is, that water is a poor conductor of heat, its temperature being equalized mainly by circulation or "convection." The space between the flasks and the walls of the vulcanizer being narrow, circulation of the water is necessarily obstructed to some extent, and the lower flask, receiving the heat directly as it is transmitted through the bottom of the vulcanizer, becomes a few degrees hotter than the upper one.

Now, if these three flasks were placed in the vulcanizer with "a few spoonfuls of water," this difference of temperature will be no less, but rather greater, if they were in an atmosphere of mixed air and steam. If precautions are taken to expel all the air, the temperature will be uniform throughout the vulcanizer, and the vulcanizing uniform in all the flasks. As vulcanizing is usually done, with more or less air included in the vulcanizer, the actual temperature of the water may be as much as twenty degrees higher than the indication of the thermometer, which only gives the temperature of the vulcanizer cover upon which it is fixed. This is shown by the fact that a steam-gauge and a thermometer, mounted upon the same vulcanizer, cannot be made to agree in their indications unless all air is expelled from the vulcanizer.

A very important factor in doing good vulcanizing, is an even temperature; any sudden variations are sure to be shown in the quality of the work. Spongy rubber is sometimes caused by a sudden fall in temperature and pressure. This is one of the principal reasons for the uniform excellence of the work done by the gas-regulator, as this device automatically keeps the temperature at the desired point when it has once been attained.

There is a good reason for not filling the vulcanizer too full of water, aside from any effect on the vulcanizing process. If there is not sufficient steam room above the water, its expansion by heat will cause it to blow

out the safety disc before the vulcanizing point is reached; or, in an extreme case, if there is no relief, the vulcanizer may burst under the strain. This is an entirely different thing from steam pressure; there will be no explosion, but the vulcanizer will give way and relieve the strain.

Water is not perceptibly elastic, and its expansion by heat in a chamber which it perfectly fills will give rise to a tremendous pressure, which, however, will be wholly relieved by a slight yielding of the walls of the chamber, or a small escape. A Whitney vulcanizer was once returned to us with the sides of its pot stretched to a quarter of an inch greater than the original diameter. On inquiry it was found that it was the effect of several vulcanizations, the vulcanizer each time being filled "brim full" of water. This was in the day of fusible safety-plugs, which did not give way to pressure, but only when the temperature rose above the vulcanizing point.

In another case, trouble was experienced with a Hayes boiler, the discs constantly blowing out. The dentist finally put on three at once, and was rewarded for his trouble by a rupture of the vulcanizer bottom. The cause of all the trouble was found to be, on inquiry, "filling the vulcanizer full of water."

The desire for quickening the vulcanizing process has led to the use of too high a temperature; hence the numerous complaints of brittle plates and spongy rubber.

Superior results can be attained with any good vulcanizer by a low heat, say 300° , the time being lengthened accordingly. The plate may be placed under water or in steam; but to secure any certainty that the thermometer will indicate the true temperature of the interior of the vulcanizer, all air must be expelled from it by blowing off steam when it is first forming. Then the rubber will not be over-heated, and all the work will be evenly done.

GEO. B. SNOW.

FILLING MATERIALS.

We have extracted, as a curiosity, an article on this subject from the *American Druggist* for July. It is not imperative that the *American Druggist* should know anything about filling materials, and if a man will only keep silence he may be credited with great knowledge; but when he writes an article apparently only to display his astonishing ignorance, he must expect to be corrected. We give the writer of this article every credit for the points on which he is correctly informed. For instance, he says of oxy-chloride of zinc: "There are two parcels in small bottles, one a powder and the other a liquid." He is certainly right about one being

a powder and the other a liquid, but he is mistaken about the liquid being a "parcel in a small bottle." The fact is, that the liquid is loose in the bottle. But we will give the whole, and append a few corrections. When the errors are crossed out, it will be hard to find much of the original communication.

"No. 1,740.—*Tooth Cement (Dr. L.)*.—'Dentists use for temporary filling a compound known as "oxy-phosphate of zinc," and another called "oxy-chloride of zinc." Of these, there are two parcels in small bottles—one a powder and the other a liquid—which, when mixed in certain proportions, form a paste, becoming hard in a longer or shorter time. What are the ingredients, and why do some samples "set" more rapidly than others?'

"The oxy-chloride of zinc paste is prepared as follows: Mix 1 part of impalpable powder of glass (obtained by elutriation) with 3 parts of finely-powdered oxide of zinc, which had previously been deprived of all carbonic acid gas by ignition. Next dissolve 1 part of borax in the smallest possible quantity of hot water, and add it to 50 parts (all by weight) of a solution of chloride of zinc having a sp. gr. of 1.5 to 1.6. Keep the mixed powders and the solutions in separate vials. For use, a portion of the powder is mixed with enough of the solution to make a uniform paste, and the latter at once applied. It will set very rapidly, and it is the function of the borax to retard this a little. By adding a suitable proportion of ochre, the mass may be more or less tinted. When it is set it is as hard as marble, and has, in fact, been recommended as a material for making statuary. It is often called Paris tooth cement.

"If any commercial samples do not set as rapidly as others, the fault may lie either with the powder or the solution, the former containing, perhaps, some carbonate, and the latter too much borax or too much water.

"The 'oxy-phosphate of zinc' paste is no doubt a similar preparation, but we do not know the precise method of preparing it. Perhaps some of our readers can furnish it. The 'diamond tooth cement' is made by rapidly mixing anhydrous phosphoric acid with lime and filling the tooth with this paste, which soon sets into hard phosphate of calcium.

"No. 1,741.—*Dentists' Alloy or Amalgam (Dr. L.)*.—'Why do some of these alloys turn black in the mouth, while others do not?'

"The alloys, or, rather, amalgams used by dentists are of varying composition. The best is made by adding mercury to pure gold (in a heated iron capsule or ladle) until the mass is of a doughy consistence at the temperature of hot water. Other alloys (amalgams) are made of silver and mercury; in others, again, the silver is replaced by zinc, tin, cadmium, bismuth, etc. Next to the gold alloy, the best is one containing gold, platinum and mercury, and next may be placed the copper alloy. All those which contain metals rendered black by sulphur or sulphides, are liable to turn dark. The mercury need not be regarded in this reaction, since it gradually disappears from the surface of the 'filling.' The gold-platinum amalgam will, of course, preserve its color best."

In the first place, powdered glass is not used in oxy-chlorides. It has been proved to be worse than useless, causing increased solubility and

disintegration. Ordinary ignited oxide of zinc is not used for fillings, although it may be used as a base for other fillings. Specially prepared and extremely dense oxides of zinc are used, these being prepared either by fusion with a flux, reduction from a zinc salt by heat, or by hydraulic pressure applied to the ignited oxide. Borax *might* be used to control the time of setting if it was necessary, and if the extremely irregular and uncertain action of borax itself could be controlled. As a matter of fact, it is not used because it is quite unnecessary, the setting being quite under control by altering the specific gravity of the liquid and the density of the powder. So much for the *American Druggist* on oxy-chlorides.

"The diamond tooth cement is made by rapidly mixing anhydrous phosphoric acid with lime." This delightfully simple recipe has "stumped the press" ages ago, but that such a mixture is used is news, indeed.

When the writer treats on the alloys for amalgams he begins well, by saying, "they are of varying composition." They are, indeed; but when he goes on to say the best is made by adding mercury to pure gold, he gets at once beyond his depth. The history of amalgams is something like this: In apparently prehistoric times a mixture of finely divided silver and mercury was found to set into a hard mass. Some one found that the silver could be adulterated with an equal weight of tin and still retain the power of hardening. This was a "great" discovery and the inventor diluted his silver and doubled the price—a fourfold advantage. When his silver ran short he used dollars, found the copper made his amalgam a little harder, and here was another grand discovery. Some one then discovered that the zinc he made his dies of could be used for letting down the silver, making the amalgam slightly soluble, and thus getting a self-cleansing face on his plugs, solubility being of course no objection—in fact being good for trade. Then came the great cadmium revolution of Dr. Evans, which was going to perform wonders. The wonders it *did* perform in the way of disintegrating, and turning teeth a bright orange yellow, were as unexpected as they were undesirable, and shortly afterwards we find makers carefully advertising the fact that their amalgam contained no cadmium. The alloy of precipitated copper and mercury, known as Sullivan's amalgam, and also the alloy of precipitated palladium and mercury, were both independent discoveries, and as regards absolute permanence in the mouth both these alloys stand in the first rank. The power of a small percentage of platinum to cause rapid setting and permanence of form of plugs, discovered by Mr. Fletcher, of England, has been largely utilized by amalgam makers. Even at the present time those scientific experts who are examining amalgams do not know, as a rule, what properties they need to test for, and we have the curious result that men who should know better, waste their time looking for infinitesimal shrinkages and expansions, which are of no importance even if

carried to the twenty-fifth decimal, and they utterly ignore the one important point—the power of an amalgam to permanently retain its shape at the temperature of the mouth.

The so-called *gold* amalgams, because “gold pervades the whole mass,” according to the advertisement, are specially noted for the minute quantity of gold which does pervade them, usually about five to seven per cent. Our contemporary surely extracts his facts from his imagination, assisted by the extraordinary advertisements intended to mislead the innocent dentist. When the writer goes on to say the silver in amalgams is replaced by tin, cadmium, bismuth, etc., he, as the English would say, opens his mouth to put his foot in it. An alloy in which the silver is replaced by tin or bismuth, has no power of setting hard and is totally useless, as is also an alloy of gold, platinum and mercury which he recommends. As to cadmium, there is no maker of amalgam alloys alive who dare admit that he uses this metal, and no one with a reputation to lose who dare use it. A malleable amalgam was introduced some years ago by an English maker, this malleability being caused by cadmium, but he very soon withdrew it, and has tried to get his business back by advertising another wonderful alloy, which has nothing new in it except the very unusual amount of profit he obtains on what he does sell.

Our contemporary crowns all by stating that mercury need not be regarded in the reaction, as it *gradually disappears from the surface of the filling!* With this we will leave him, merely expressing our opinion that he has wasted valuable time in writing imaginary recipes.

A VISIT TO FOREIGN DENTAL SCHOOLS AND OTHER OBSERVATIONS.

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILLINOIS.

(Continued from page 113.)

The operating room is generally called a “surgery,” and is usually situated at some distance from the waiting room, so that no unpleasant odors are detected, or sounds heard by the patient who is next to be operated upon. As most dentists are located in residences, this is generally easy of accomplishment, for our free American method of receiving patients has not been adopted in Europe. The caller is usually conducted to the waiting room by a servant in evening dress. In some establishments I noticed a visitors’ register, where the name of the patient is either written by himself or the attendant. I consider this a good idea, as at home

many callers do not give their name or present a card, and hence their identity is not disclosed until they enter the operating room. If some such system prevailed with us we could escape many an interruption from transient callers, whose only aim is to sell something, or to inquire about fees, etc.

The dental laboratory is called a "workshop," which it generally resembles, as it is frequently located in the basement, and is supplied, in many instances, with ponderous machinery. Some of these "workshops" are very large, as many artificial teeth are made in England. If the proprietor does a good business, you will find a foreman and several workmen and boys seated at benches, or polishing plates, or engaged in the act of putting up cases or "orders" of teeth. To undertake the manufacture of a set of teeth is called taking an "order." The dentist, or his assistant, takes the impression and "bite," and the work is done below. I believe that the "workman" never sees the patient, except in rare instances. Some of them receive good pay, and they work long hours, about ten or eleven per day. They usually enter the establishment from a side street or alley, and never at the front door. Very few workmen ever attain to the dignity of a registered dentist. Some of them practice dentistry under the name of a druggist or chemist, who got his name registered as a dentist by the act of 1878, because he extracted teeth when the English law went into effect. Many unqualified men in this manner figure as dentists, who really have no right to call themselves such.

In a large city, like London, there are many dental "workshops" not connected with practices, where artificial teeth are made for dentists in regular practice, and I understand that the proprietors of some of them practice the art of mechanical dentistry for the middle and lower classes without being found out by the authorities. From my own observations, there are a good many men practicing dentistry in England whose names are not on the register. Many of these are Americans. They have charge of branch offices, which are quite numerous in London and the suburbs. Most of the Americans thus practicing, either as assistants or in charge of branches, are graduates of American Colleges not recognized by the English Medical Council. In this way English dentists, who may not be expert operators, employ the skill of native "Yankees," and sometimes their cards will say "American operators in constant attendance," etc. The chief ambition of many English dentists is to get on the attending or consulting staff of a hospital or infirmary, because after this is accomplished their fortune is assured. (We Americans are not so slow in this direction.) Professional men everywhere are not likely to throw such opportunities away, when they generally lead to acquaintance with medical men and the public at large.

I was rather astonished to find so few society organizations in England. The British Dental Association, it is true, meets annually, and there are several branches in various parts of the kingdom, but in London there is practically but one society—the Odontological. A students' society is connected with each of the schools, and they have the Odonto-Chirurgical Society of Scotland, at Edinburgh, but I believe there is no society in Wales or Ireland, unless there be one in Dublin. The membership of the Odontological Society is not large—about one hundred and twenty, I believe. There is no American Dental Society in London. There is room for one, and also for two or three native societies. The Association of Surgeons practicing Dentistry is defunct, or if not, their proceedings are no longer published. It is expected that several new branches of the British Dental Association will be established very soon. There ought to be a society in every large city, at least in Great Britain. Liverpool, Manchester, Leeds, Sheffield, Glasgow, Dublin, Belfast, and other cities not so large, could sustain societies, if eight or ten men would go to work and shake off little differences of opinion, which are many times only imaginary, and thus raise the standard by associated effort. Great Britain needs a few missionary dentists to wake up the indolent and routine practitioners. When this is done, more valuable ideas will come to light than many now dream of. It will be a good thing for the people, as more natural teeth will be saved, and after all that is what we hope to accomplish.

Dental journalism is represented by three publications. *The Journal of the British Dental Association* is edited by the accomplished Underwood, a genuinely scientific man, who has already made of his journal a very readable and welcome periodical. It is a monthly, and the subscription price is only about \$1.80 per annum. *The Dental Record* is edited by Thomas Gaddes, one of the veteran teachers of the National Dental Hospital, and its Dean. It is also a monthly, and the subscription price is the same. I have been a subscriber to it from its first issue, and can recommend it to my American *confrères*. Last, but not least, is the old *British Journal of Dental Science*, a semi-monthly, issued the first and fifteenth of every month. This is edited impersonally, though if so minded I could give the editor's name. I do not propose to say which I think is the best journal, for they have all treated me better than I deserve, by republication of my own articles at various times. The price of the last named is double that of either of the others, but it must be remembered that it appears twice to each of the other's once. I could not be satisfied if I did not see its blue cover on my library table every fortnight from year to year. I am a believer in dental periodicals, and very often in former years it has only been by close economy that I could take them all. I have never regretted the sacrifice, as

I have usually found something of value even in the smallest and most insignificant of the quarterly advertising sheets. I recommend more of the American dentists at home to become subscribers to at least one of the journals named, as it will well repay them for the outlay, and they will thereby see how great a world lies beyond their own horizon.

In closing this paper on the customs and habits and other things seen in Great Britain, a word or two must be said about the dental depots. We are apt to think that they are very much behind us in producing novelties in the way of new instruments and appliances. This is a mistake. There are several large establishments in London whose sales of goods of their own manufacture must be enormous. Albion is the land of cements, amalgams, artificial teeth, nitrous oxide, rubbers, forceps and modeling compounds. Many American inventions are brought out in England almost as soon as they are sold here. One reason why so many goods of American manufacture are sold in England, is because there is no tariff. Our prohibitory tariff laws, on the other hand, prevent the English merchants and manufacturers from introducing their goods into this country, by reason of the excessive duties levied upon them. When we are not certain that we are to get good value for our money, we do not invest in goods of foreign workmanship, and as the duties are so high, there is scarcely any profit to the dealer who might keep English goods; hence, we seldom see articles of English dental merchandise. I will say for the products of the English dental manufactories, that I have found them in many instances as good in quality, and in some cases much better than our own, and, in spite of the heavy duties, quite as cheap as American products.

Every little device which is evolved from the brain of the dentist is not patented in Great Britain as often as it is at home, and in consequence many small articles do not have fancy prices attached to them. I cannot commend the practice of keeping secret the components of many medicaments which are offered for sale abroad as well as at home, as this sort of quackery is not in keeping with our desire to be considered a learned profession. The habit prevails in England and the United States unfortunately, by some would-be scientific gentlemen, of offering secret anæsthetics, obtunders and other panaceas, at so much per bottle, and when they are advertised in dental journals it gives them a certain value to the illiterate and unthinking, and thereby degrades the profession of which they are members. If the publishers could exclude such advertisements, empirical and quackish nostrums would soon fade out of existence. In the next number I will give my impression of Germany and German dentists.—*Independent Practitioner.*

FLAME CONTACT, A NEW DEPARTURE IN WATER HEATING.

BY THOMAS FLETCHER, F. C. S.

A paper read at the Meeting of the Gas Institute, London, on June 9th, of which the following is an abstract:

It is my intention to prove to you on theoretical grounds, and also by experimental demonstration in such a manner as will admit of no possible doubt that the present accepted system of water heating, by gaseous or other fuel, is a very imperfect means for an end, and is, both in theory and practice, essentially faulty. My statements may appear bold, but I come prepared to prove them in a manner which I think none of you will question, as the matter admits of the simplest demonstration. I will, in the first place, boil a specified quantity of water in a flat-bottomed vessel of copper; the time required to boil this you will be able to take for yourselves, as the result will be visible by the discharge of a strong jet of steam from the boiler. I will then take another copper boiler of the same form, but with only one-half the surface to give up its heat to the water, and will in this vessel boil the same quantity of water with the same burner in a little over one-half the time, thus about doubling the efficiency of the burner, and increasing the effective duty of the heating surface fourfold, by getting almost double the work from one-half the surface.

The subject is a comparatively new one, and my experiments are far from complete on all points, but they are sufficiently so to prove my case fully. As no doubt you are all aware, it is not possible to obtain flame contact with any cold, or comparatively cold, surface. This is readily proved by placing a vessel of water with a perfectly flat bottom over an atmospheric gas-burner; if the eye is placed on a level with the bottom of the vessel a clear space will be seen between it and the flame. I cannot show this space on a lecture-table to an audience, but I can prove its existence by pasting, with flour paste, a paper label on the bottom of one of the boilers, and exposing this to the direct impact of a powerful burner during the time the water is being boiled, and you will see that it comes out perfectly clean and uncolored. Now, it is well known that paper becomes charred at a temperature of about 400° F., and the fact that my test-paper is not charred proves that it has not been exposed to this temperature, the flame being, in fact, extinguished by the cooling power of the water in the vessel. I need hardly remind you that the speed with which convected or conducted heat is absorbed by any body is in direct ratio to the difference between its own temperature and that of the source of heat in absolute contact with it; and therefore, as the source of the heat

taken up by the vessel is nothing but unburnt gases, at a temperature below 400° F., the rate of absorption cannot, under any circumstances, be great, and the usual practice is to compensate for this inefficiency by an enormous extension of surface in contact with the water, which extension I will prove to you is quite unnecessary. You will see I have here a copper vessel with a number of solid copper rods depending from the lower surface; each rod passes through into the water space and is flattened into a broad head, which gives up its heat rapidly to the water. My theory can be stated in a few words: The lower ends of the rods not being in close communication with the water, can, and do, attain a temperature sufficiently high to admit of direct flame contact, and as their efficiency, like that of the water surface, depends on the difference between their own temperature and that of the source of heat in absolute contact with them, we must, if my theory is correct, obtain a far greater duty from them. I do not, of course, profess to obtain more heat from the fuel than it contains, but simply to utilize that heat to the fullest possible extent by the use of heating surfaces, beyond comparison smaller than what have been considered necessary, and to prove not only that the heating surfaces can be concentrated in a very small area, but also that its efficiency can be greatly increased by preventing close water contact, and so permitting combustion in complete contact with a part of the heating surface. I will now boil 40 ounces of water in this flat-bottomed copper vessel, and, as you will see, sharp boiling begins in 3 minutes 15 seconds from the time the gas is lighted. The small quantity of steam evolved before this time is of no importance, being caused partly by the air driven off from the water and partly from local boiling at the edges of the vessel, owing to imperfect circulation. On the bottom of this vessel is pasted a paper label which you will see is untouched by the flame, owing to the fact that no flame can exist in contact with a cold surface.

I will now take this vessel, which has only one-half the surface in contact with the water, the lower half being covered with copper rods $\frac{3}{16}$ -inch diameter, $\frac{1}{2}$ -inch centres apart, and $1\frac{1}{2}$ inches long, and you will see that with the same burner as before, under precisely the same conditions, sharp boiling takes place in 1 minute 50 seconds, being only 13 seconds more than half the time required to produce the same result with the same quantity of water as in the previous experiment. Although the water surface in contact with the source of heat is only one-half that of the first vessel, and the burner is the same, we can see the difference, not only in the time required to boil the 40 ounces of water, but also in the much greater force and volume of steam evolved when boiling does occur. With reference to the form and proportions of the conducting rods, these can only be obtained by direct experiment in each case for each distinct purpose. The conducting power of a metallic rod is limited, and the

higher the temperature of the source of heat the shorter will the rods need to be, so as to insure the free ends being below a red heat, and so prevent oxidation and wasting. There are also other reasons which limit the proportions of the rods, such as liability to choke with dirt and difficulty of cleaning, and also risk of mechanical injury, in such cases as ordinary kettles or pans; all these requirements need to be met by different forms and strengths of rods to ensure permanent service, and by substituting in some cases a different form and type of heat conductor. To prove my theory as to the greater efficiency of the surface of the rods in contact with the flame as against that in direct contact with the water, I have another smaller vessel which, including the rods, has the same total surface in contact with the flame, but only one-third the water surface as compared with the first experiment. Using again the same quantity of water and the same burner, we get sharp boiling in 2 minutes 10 seconds, being an increase of duty of 50 per cent., with the same surface exposed to the flame. The rods in the last experiment form two-thirds of the total heating surface, and if we take, as I think for some careful experiments we may safely do, one-half the length of the rods to be at a temperature which will admit of direct flame contact, we have here the extraordinary result that flame contact with one-third of the heating surface increases the total fuel duty on a limited area 50 per cent. This really means that the area in contact with flame is something like six times as efficient as the other. If you will take two ordinary metal ladles for melting lead, cover the lower part of one of these with the projecting rods or studs and leave the other plain, you will find on melting a specified quantity of metal in each that the difference in duty between the two is very small. The slight increase may be fully accounted for by the difference in the available heating surface reducing the amount of waste heat passing away, and this proves that flame contact, and therefore quick absorption of heat, takes place on plain surfaces as soon as these are above a certain temperature, which, in a metal ladle, very soon occurs. What the temperature is which admits of flame contact I have, as yet, not been able to test thoroughly, and it will need some consideration how the determination of this is to be correctly made; at the same time it is a question in physics which should be capable of being answered.

When we come to boilers for raising steam, which have to stand high pressures, we come to other difficulties of a very serious nature, which require special provision to overcome them. I have found that rods or points, such as I have described, are not necessary, and that the same results can be obtained by webs or angle-ribs roled in the plates. My experiments in this direction are not complete, and at present they tend to the conclusion that circular webs, which would be of the greatest efficiency in strengthening the flues, are not so efficient for heating as webs

running lengthwise with the flue, and in a line with the direction of the flame.

I will now show you, as a matter of interest in the publication of coal gas as a fuel, how quickly a small quantity of water can be boiled by a kettle constructed on the principle I have described, and to make the experiment a practical one I will use a heavy and strongly-made copper kettle which weighs $6\frac{1}{2}$ lbs., and will hold, when full, one gallon. In this kettle I will boil a pint of water, and, as you see, rapid boiling takes place in 50 seconds. The same result could be attained in a light and specially-made kettle in 30 seconds, but the experiment would not be a fair, practical one, as the vessel used would not be fit for hard daily service, and I have therefore limited myself to what can be done in actual daily work rather than laboratory results, which, however interesting they may be, would not be a fair example of the apparatus in actual use at present.—*Dental Record*.

A NEW ANÆSTHETIC.

A week ago, a little bald-headed dentist, who lives in Brooklyn, sent invitations to the eminent doctors in this city and Philadelphia, asking them to be present at a series of experiments that he proposed with a new anæsthetic he had discovered. He explained that his compound was something entirely unknown hitherto, and the result of five years' work. He pleaded that he was poor, and could not afford to give his formula to the world; and, although he was willing to demonstrate the uses of his discovery, he preferred to keep its ingredients to himself.

When he appeared in the laboratory of a friend to demonstrate the practical advantage of his discovery with patients, he found nobody there to listen to him. But on Tuesday afternoon six well-known physicians and a reporter, in the parlor of an up-town dental establishment, awaited his arrival. He came at last, mopping his bald head and shaking the rain-drops from his threadbare coat. In a rambling sort of a way, while he opened his instrument bag and evaporating pans, the dentist made a little speech, in which he told the story of his discovery.

"For many years," he said, "I have thought that progressive science should devise means for producing natural sleep at will. Knowing that the agents heretofore used for producing anæsthesia seriously interfered with the natural and indispensable functions of the heart, lungs, and brain, I therefore determined to investigate, and discover, if possible, some agent that would produce natural sleep at will, without pain or danger, or in any way interfering with the normal organic functions

of the human system. In my researches I find the function of the brain suspended in two ways: first, a complete suspension of the brain function; as in coma; second, as in syncope or prolonged faint. No person can be wakeful with a diminution of the blood circulation of the brain. Sleep depends entirely upon that. If, however, the condition of sleep becomes abnormal, and remains so for a considerable length of time, the syncopic effect must produce death. Chloroform, ether, nitrous oxide gas, produced sleep analogous to that existing in coma, and may end in death."

Here the little dentist went into a discussion on the functions of the nerves, and the effect of the old anæsthetics on the system, and their tendency to produce nausea, headache, prostration, and perhaps death. He wound up by saying that his discovery produced natural sleep almost instantaneously, and the patients recovered of their own accord, invigorated and refreshed. He hobbled into a side room, and soon appeared with a decrepit old woman. He promised to remove all the decayed stumps from her mouth if she allowed him to use his anæsthetic in the operation. He saturated a napkin with a substance that looked like water, and emitted a pleasant odor. For an instant he held it over the old lady's nose, telling her to breathe freely, and in thirty seconds she was unconscious. He allowed the napkin to remain, and for over two minutes he worked, extracting sixteen teeth. The patient never moved, and to all appearances she did not feel the pain attending the operation. On removing the napkin, almost immediately she revived, and stepped out of the chair as fresh and hearty as when she got into it.

She said that she had a vague idea of what was going on while under the influence of the anæsthetic, but could not move hand or foot. She was reminded of a person in a trance, and described the symptoms she experienced as a sort of suspended animation. She said she knew that the dentist was pulling her teeth out, but she felt no pain.

Eight persons were made and kept unconscious from a half to two and a half minutes. In one case the napkin was allowed to remain for six minutes. The patients told stories similar to the old lady's, and went away in good spirits. The reporter was the last subject, and these, in brief, were the sensations he experienced:

From the moment the napkin was placed over his face a feeling of unconsciousness came over him, and at the end of the third free inspiration everything became blank. His arms hung at his side, and he could feel that they were there, but they were beyond the voluntary control of the will; a sense of dreamy languor followed, and, as if on the wings of a fleet bird, he was borne through the air high above the earth. The sensation was altogether pleasant. Then the scene changed, and his skull tingled as if a million minute hammers no bigger than a fine needle

began pounding all at once. They shattered into fragments in an instant, the napkin was removed, and all was over. Recovery was instantaneous, and all effect was gone. The time, taken by one of the physicians, was one and three-quarter minutes.

The little dentist was urged to reveal the component parts of his anæsthetic, but he refused, saying that he was too poor; and, as much as he would like to do something for science, he had to think of his hungry wife and children at home. The physicians who witnessed the experiments said the results were marvelous, but as long as the whole thing could not be scientifically explained to the profession at large, they would never accept it. Perhaps it will never receive the just recognition it so richly deserves.—*New York Star*.

EXPLOSION OF A SEABURY VULCANIZER.

Mrs. Josie E. Weakley, of 1261 Fleetwood avenue, went to Segers' dental rooms, 931 Arch street, to have something done to one of her teeth. She was hardly seated in the dentist chair, when there came a terrific explosion, which badly bruised the patient and ruined her clothing, frightened the dentist nearly out of his wits, and made a wreck of the room. When the doctor and his patient had recovered from the shock, it was discovered that a machine in the room called a vulcanizer had exploded. The report was like the bursting of a cannon, and the havoc nearly as great. "It was the most frightful experience I ever had," Mrs. Weakley said, "and my shoulders and limbs are black and blue from the bruises I received. I shall enter suit against the party or parties to blame, unless reparation is made for my injuries and the loss of my clothing, which was entirely ruined. It was a miracle that I was not killed.

"As soon as I recovered from the shock, I discovered that I had been struck in several places with flying missiles, and was literally covered with ink, a large bottle of which had been scattered in the wreck. At the time of the explosion I was in the operating-chair, and Mr. Segers was not three feet from me. As soon as I was sufficiently composed he called a coupé and I was driven to my home." Mrs. Weakley, who is an attractive woman of perhaps 30, with a fine physique, had not fully recovered from the nervous shock produced by the explosion, and said, laughingly, she didn't think she ever would.

An hour later a reporter for *The Times* called at 931 Arch street, and on inquiring for Mr. Segers' dental rooms, was shown to the back rooms of the second story. Mrs. Weakley was in the operating room with the doctor, talking over the startling episode.

As the reporter entered, both directed his attention to the scars on the

walls, ceiling, doors and furniture that told of the explosion's work. A panel of one door was driven completely out, and in another an articulator with a cast of a set of teeth was indented so deep that it stuck fast. The mirror of a large dressing case was smashed to atoms, and the head-board of a bed split and otherwise disfigured. On the wall, immediately alongside of the bed, was an abrasion several inches long and half an inch deep, made by a piece of iron and brass, while in the ceiling overhead a hole two inches in diameter jammed in as if a huge weight had descended was cut clear through. One of the heavy window-sills was torn up as though lifted out of place with a crow-bar, and the lid of a large trunk was upon it. Ink was spattered in every direction, and the fixtures of the room were all more or less defaced. The windows were up at the time of the explosion, and much of its force was spent on the walls of the buildings to the rear. These walls show a dozen indentations that indicate the violence with which they were struck. Bricks are torn out in several places twenty feet distant from the room where the accident occurred, and in other cases there are deep gashes in the walls made by the flying debris. Mrs. Weakley repeatedly remarked: "It was miraculous that Mr. Segers and myself escaped with our lives, as we were in the very midst of it."

The dentist, who still acted and talked nervously, was asked to explain the occurrence. He said: "A few minutes before I began work on Mrs. Weakley's tooth I touched a match to the gas-stove under the vulcanizer, which sat in the open window a few feet from the operating chair. This heats the water in the cylinder that generates the steam for use in another connecting one of equal size. These cylinders are of brass, about six inches in diameter and nine inches high. We vulcanize at about 120 pounds of steam pressure, or 345° Fahrenheit. Noticing while at work on Mrs. Weakley's tooth that the pressure had reached 120 pounds, I turned the gas down very low, but nevertheless in a few minutes heard the fearful explosion, and was stunned by the violent concussion. The only explanation of the explosion that I can offer, is that these vulcanizers generate steam very fast, and, having no safety-valve, are liable to such accidents as this."

The reporter was then shown pieces of the wrecked machine. The gas stove attachment was of cast iron and the cylinders of brass about a sixth of an inch thick. It was pieces of the exploded cylinders that were driven with the most destructive force, and which shattered the mirror, tore through the ceiling, gashed the brick walls and shattered the doors and window-sills. From their size, and the force with which they were hurled by the explosion, there is no doubt that if any of them had struck either of the persons in the room in a vital part, the injury must have been fatal.—*Philadelphia Times*.

THE MODUS OPERANDI OF NITROUS OXIDE GAS AS AN ANÆSTHETIC.—THE NATURE OF THE SO-CALLED "DENTISTS' LEG."

BY GEORGE JOHNSON, M. D., F. R. S., LONDON.

Emeritus Professor of Clinical Medicine, Consulting Physician to King's College Hospital.

A highly intelligent member of the dental profession with whom I was lately discussing the two somewhat disconnected subjects which I have placed at the head of this paper, assured me that the readers of the *Journal of the British Dental Association* would be interested in the explanation of the above subjects which I gave him.

1. *The modus operandi of nitrous oxide gas as an anæsthetic.*—The main phenomena attending the inhalation of the gas, with which every dentist must be familiar, are as follows: generally during the first few seconds the pulse and the breathing are quickened under the influence of emotional excitement. In the next stage the breathing is slow and shallow, while the pulse is remarkably full and firm. Then after another brief period, the pulse suddenly becomes almost or even quite imperceptible, the features and the general surface of the body are livid, the pupils are widely dilated, and the muscles are rigidly contracted or convulsed, as in the first stage of an epileptic fit. The mouth-piece being removed and air readmitted to the lungs, the skin quickly regains its normal color, the pulse returns, and for a few seconds, until the blood has been thoroughly aerated, it resumes the full and throbbing character which it had during the second stage of the inhalation.

The explanation of these striking phenomena is not difficult. The inhaled nitrous oxide undergoes no chemical change, but it rapidly diffuses and replaces the oxygen in the lungs and in the blood. Black unoxygenized blood passes into the left side of the heart and systemic arteries and excites the contraction of the muscular arterioles—those contractile tubes whose office it is, after the manner of stop-cocks, to regulate the blood supply to the capillaries and the tissues. The resistance thus offered to the passage of unaerated blood through the terminal systemic arterioles explains the temporary fulness and high tension of the radial pulse.

What then is the explanation of the subsequent feebleness and even cessation of the pulse? This is to be found in the condition of the *pulmonary* circulation. In the early stage of the inhalation, the blood, although not aerated, is allowed to pass freely through the lungs, but at a later stage the blood, becoming more completely deoxidized and passing through the systemic capillaries without the usual interchange of materials

which occurs between aerated blood and the tissues, returns to the right side of the heart and the lungs in so abnormal a condition as to excite the contraction of the resisting pulmonary arterioles. The resistance thus offered to the passage of the blood through the lungs lessens the blood supply to the left side of the heart and the systemic arteries, and explains on the one side the systemic arterial emptiness, with feebleness or even complete cessation of the pulse, and on the other the systemic venous fulness with lividity of the skin; while the epileptiform condition is explained by the sudden and extreme diminution of the blood supply to the brain. Epileptic convulsions invariably occur when, in a living animal, the arteries which supply the brain are all obstructed by ligature.

About ten years ago my friend, Mr. Hamilton Cartwright, assisted me to give a fatal dose of nitrous oxide to two rabbits; and opening the chest immediately after death, we found in both animals the right cavities of the heart and the systemic veins enormously distended, while the left side of the heart and the systemic arteries were nearly empty, the blood on both sides of the heart being equally black.

The explanation which I have here given is in strict accordance with modern physiological doctrines, and the subject was discussed at some length in a correspondence between the late Mr. Clover and myself, which was published in the *Lancet* (May and June, 1876).

That with ordinary care nitrous oxide anæsthesia is unattended with serious risk, is amply proved by the innumerable cases in which the administration of the gas has been safely and satisfactorily performed,* but on the other hand, it cannot be denied that when the inhalation has been pushed so far as to cause complete absence of pulse with general lividity of the skin and more or less muscular convulsion, the great over-distention of the right cavities of the heart, which must inevitably be associated with the phenomena in question, is attended with some degree of danger. The danger is especially great in very fat people beyond middle age. In such subjects there is commonly an excessive growth of fat over the heart, and especially over the right cavities, whose muscular walls being enfeebled by the encroachment of adipose tissue, may be subjected to a paralyzing over-distention by the incautious exhibition of nitrous oxide gas.

In the vast majority of cases, the pulmonary circulation is rapidly set free by the re-introduction of air into the lungs, and so the distention of the heart's right cavities is removed.

2. *The nature of the so-called "Dentists' Leg."*—The special symptoms of which members of the dental profession often complain, consist for the

* Mr. Clover, in one of his letters to the *Lancet*, stated that he had "put to sleep more than eleven thousand persons with the gas without one fatal result."

most part of various perverted sensations in one thigh. In addition to a feeling of muscular fatigue, there is often a sense of numbness in the skin, while others after standing for three or four hours have a painful feeling, resembling that produced by scalding water applied to the outer part of the thigh.

My attention was first directed to this subject by a dental surgeon, who consulted me on account of numbness of the thigh, which he feared might be the precursor of paralysis. I relieved him of his anxiety by giving him what I have no doubt is the true explanation of these perverted sensations. Our every-day experience teaches us that over-strain and fatigue may be direct causes of muscular pain; but in addition to this, the long continued rigid contraction of the muscles which are engaged in maintaining such a fixed position as the operating dentist often has to assume, must greatly impede the circulation, not only through the muscles, but also through the overlying integuments. As the alternate contraction and relaxation of the muscles, in walking for instance, assists and quickens the circulation, so the condition of fixed and rigid contraction impedes and retards the circulation by exerting a continuous pressure upon the blood-vessels, and especially upon the soft and easily compressed veins. The impeded circulation affects not only the muscles, but also the skin and the subcutaneous tissues, and the nerves which are distributed to the various tissues; and one result of a defective circulation through the nerves is to cause various perverted sensations, such as numbness, a sensation of "pins and needles," or a painful feeling of heat and scalding. It is probable too that direct compression of the nerves by the firmly contracted muscles may have some influence in the production of the painful sensations which, in accordance with a well known physiological law, are referred to the cutaneous terminations of the sensitive nerves. The obvious means of prevention and of cure consist in rest for the over-strained limb, or such a frequent change of position as is equivalent to a certain degree of rest. Standing in one position is notoriously more fatiguing than walking; the explanation being that while in standing the muscles are in a constant state of active contraction, the circulation through them being thus enfeebled and retarded, walking involves alternate contraction and relaxation of the muscles, with an invigorated and quickened circulation.

Mr. Dennant, of Brighton, in the course of a discussion on a paper by Mr. Oakley Coles, read at a meeting of the Odontological Society in June, 1884,* stated that he had obtained great relief from the use of the Lyons stool.

Some form of active exercise after the day's work and strain will surely be beneficial.—*Journal of the British Dental Association.*

*Transactions of the Odontological Society of Great Britain, Vol. xvi., No. 8, new series.

DOCTOR WILHELM HERBST'S AMERICAN VISIT.

Dr. Herbst, having been invited by the First District Dental Society of the State of New York to come to this country and give clinics, sailed from Bremen on the 19th of June, and arrived in New York on the 28th of the same month. He was officially welcomed by a committee of the society, who arranged a reception and dinner on the following Friday, at which a large number of distinguished members of the profession were present from all parts of the country. A dinner was also given in his honor by Dr. C. F. W. Bödecker, to which the professors of operative dentistry of every college in the country, and other prominent practitioners, were invited. Subsequently a complimentary dinner was given him by the dentists of Philadelphia.

In New York, in Philadelphia, at the meeting of the New Jersey State Dental Association, at Asbury park, at Niagara before the American Dental Association, and elsewhere, Dr. Herbst gave clinics, in season and out of season, seeming to have but one desire—namely, to explain and illustrate to each and all whatever might be thought of practical value in his methods of practice. His modesty, no less than his geniality and earnestness, won for him appreciation and esteem. Everywhere he received a cordial greeting and hearty welcome, and by common consent, without regard to the adoption of his methods, he was pronounced not only a good fellow, but a genius. To what extent the rotation method, which he taught and illustrated, will be adopted in this country remains to be seen; but we are confident that no intelligent observer witnessed his clinics without having learned something of practical value in operative dentistry.

By a unanimous vote Dr. Herbst was made an honorary member of the American Dental Association, and he left our shores carrying with him the good wishes of every member of the profession with whom he had come in contact.

We are permitted to make the following extract from a letter written by Dr. Bogue to a professional friend, which expresses what may be called the conservative view of Dr. Herbst's methods:

"I went twice to Dr. Bödecker's house to see Dr. Herbst, of Bremen, operate, and my admiration for him is very great. He has worked out, quite alone, as I understand it, the system of operating through which we Americans have been passing for the last thirty years. He has encountered the same difficulties, tried a dozen different ways, perhaps, to surmount them, and the dozen are about the same that we have tried. He has alternately been encouraged to accept or led to abandon certain tried methods, and he has at last, after 'swinging round the circle,' come back to the principles which were taught to us by our preceptors.

“Dr. Herbst has adopted or added to the appliances which we possessed in our early days—the dental engine (Morrison), the rubber dam (Barnum), the matrix (Jack), the principle of cohesion of gold at common temperatures (Westcott, Arthur, Dwinelle), its softness when covered by extraneous gases (Black), and round points for filling (Lord, Bronson). He now uses the dam, filling largely by hand-pressure and small points, with soft cylinders and ropes of non-cohesive gold at the bottom of the cavity, following up with his plugger, just as we used to, with a small burnisher finely pointed (the efficiency of which method has been so ably demonstrated by Dr. Shumway, of Plymouth, Mass.); only he makes his burnisher of garnet and puts it into the engine. When his cavities are big or badly shaped he surrounds them with a matrix of German silver, soldered together on the operating table with his alcohol lamp and a bit of jeweler’s soft-solder; reinforced, if need be, where there are no adjoining teeth, by a wire twisted around the outside of the matrix and in turn soldered to it, the whole taking from two to four minutes. He then goes on with his filling, using strongly cohesive gold, after the bottom of the cavity is covered with soft gold.

“In packing his gold Dr. Herbst makes sure that the force applied drives it against the matrix. In this he agrees with Dr. Jack’s instructions regarding the use of matrices. He sometimes places a layer of cotton between his burnisher and the gold to prevent adhesion of the burnisher and to act as a buffer. He tests his filling step by step as he goes along with a sharp-pointed plugger, to assure himself that his work is perfect.

“He has cases of appliances which he has used and discarded, showing the development of his ideas, all the way from their first inception to their practical working out. Among these appliances are finishing wheels, made by mixing corundum-powder with soft, unvulcanized rubber, then cutting out the center and inserting unvulcanized plate rubber into the opening and vulcanizing the whole. This makes a hard rubber center with a soft rubber cutting-disk on the outside, whose use is obvious. Other finishing wheels are easily made of the refuse from corundum wheels, vulcanized with hard rubber after dissolving out the shellac.

“For cylindrical engine-burs, such as we pay a dollar and a half for, Dr. Herbst takes the worn-out socket from an ‘ever-pointed’ lead pencil, fastens it to the shank of an engine-bur, breaks off from a quarter to three-quarters of an inch of a mouse-tail or a rat-tail file, sticks it into this socket with shellac, and has a better bur than can be bought for money. He takes a large steel pen which approximates the cylindrical form of a tooth, cuts a hole through that portion which fits best, sticks it to the tooth (after the dam is in position) with Stent’s impression compound, crowding the dam and the gum up together, and thus forms a clamp for inserting a labial filling far more effectual and perhaps less painful than the clamps that can be purchased.

“For coloring fillings he pulverizes glass of various colors—dark amber, blue and red—keeping it ready in small bottles.

“When he wishes to fill the labial surface of an incisor, and have the filling but little visible, he takes an impression of his cavity, then mixes with water into a paste some pulverized glass of a color to match the tooth. After moulding his paste into the cavity of his model he vitrifies it in his muffle, and sets his glass filling in, mosaic fashion, with a thread of gold at one edge and cement at the other, or perhaps entirely surrounding the glass filling with the thin thread of gold. This gold thread is simply a narrow filling, packed like any other filling.

“For fertility in invention of means to accomplish ends in little matters I think I have never seen him surpassed. He is so fruitful in resources, or what we often call ‘dodges,’ that one is surprised at the simplicity of what at first sight seem to most men complex operations.”—*Dental Cosmos*.



ON THE TREATMENT OF PYORRHŒA ALVEOLARIS.

BY J. HENRY WHATFORD, EASTBOURNE.

Read before Southern Counties' Branch of the British Dental Association.

The writer refers mainly to a mode of treatment proposed by Dr. Philip Crampton, of Dublin, who was himself a sufferer from pyorrhœa.

He found sulphate of copper act as a complete cure in his own case, and he cured many others similarly affected. For the last two and a half years the writer employed this method of using sulphate of copper in some well marked cases of pyorrhœa alveolaris (two of them very unpromising), and in the great majority found it curative.

Pyorrhœa alveolaris in its early stage appears to be a form of local inflammation resulting in separation of the margin of the gum from the necks of the teeth, and the formation of a pocket for the lodgment of foreign bodies, the gum at the same time changing its color from the normal pale rose hue to a darker color, becoming spongy in texture, swollen, readily bleeding on slight provocation, and its margin becoming rounder and averted from the necks of the teeth. This may exist for months or years, with so little inconvenience as scarcely, if at all, to attract the attention of the patient. As the disease advances the symptoms increase, and there supervenes a sense of fulness, throbbing, and gnawing irritation. Slight pressure on the gum surrounding the teeth causes a drop or more of thick, sometimes fetid pus to exude at the necks of the teeth. The teeth lose their proper sensibility, gradually become loose, and the denuded fangs become often coated with a tenacious layer of very hard

greenish-brown tartar, and if the disease be allowed to progress without treatment, the alveoli get absorbed, and the teeth drop out. This disease is found apparently in every constitution, healthy or otherwise; indeed, the general state of constitution seems not to affect the disease. It appears to be sometimes hereditary; local injury seems an exciting cause in some cases.

The local effects of pyorrhœa resemble those of scurvy; however, the last named disease has very marked constitutional symptoms of what pyorrhœa has none.

Scurvy can be generally traced to constitutional degradation, owing to want of proper nutriment. Again, scurvy is generally readily curable by proper nutriment combined with constitutional treatment and cessation from hardship; local treatment being unneeded; whereas in pyorrhœa local treatment is all-important, and constitutional of slight avail. Some refer the origin of pyorrhœa to the alveolo-dental membrane, others believe that the alveolar process is first affected, while others attribute it wholly to neglect in cleansing the teeth, and thus allowing tartar to accumulate between the necks of the teeth and the gum. Mr. Charles Tomes has related a case of a patient, aged 25 years, in which all remaining teeth were removed, and on many of them distinctly affected there was no tartar. Dr. Arkövy, of Buda-Pesth, found that, besides pus corpuscles, threads of *leptothrix buccalis* were always present in abundance, and concluded the fungus was intimately connected with the origin of pyorrhœa alveolaris. Dr. Islai and others have confirmed these results. A case is quoted exemplifying that the purely surgical treatment advocated by Dr. Riggs is not always successful.

Mrs. P., aged 34, no family, somewhat anæmic in appearance, with good family history, and in very good health.

About three years ago she noticed that her upper and lower central incisors were becoming loose, and her dentist prescribed some remedy, which for a time eased her discomfort; the gums, however, became rapidly spongy, the teeth looser, causing considerable discomfort, and at times pain. Her gums were scarified; tannin, carbolic acid, acetic acid, and other remedies were tried without avail, and she gave up all idea of further treatment. Coming under Mr. Whatford's care, he decided to try sulphate of copper. At the time of her visit the incisors of the upper and lower jaws, and the bicuspid teeth of the upper jaw were very loose, and the neighboring gum deeply congested, tumid and thickened, and detached from the fangs, which were coated with hard tartar, more particularly those of the lower teeth, and on pressure a thick discharge appeared between the teeth and the gums. For the first two or three days a little finely-powdered sulphate of copper was packed between the gums and teeth by means of a piece of wood suitably shaped, and an improvement

in comfort and in the appearance of the gums appeared on the second day. When the gums had improved in color, and the sponginess had disappeared, he removed the tartar, which could not be done earlier without causing pain. For seven successive days he packed the finely-powdered sulphate of copper under the gum and around the teeth in the manner described, and then, after a week's interval, renewed the treatment for four more days. The discharge ceased after the seventh visit, but the upper teeth were soonest well; eight daily applications sufficed to cure them; the lower teeth gave more trouble, probably owing to the difficulty experienced in thoroughly applying the remedy on account of the ready flow of saliva it appeared to cause. Eventually, however, all the teeth became quite firm. More than a year since the commencement of treatment the mouth was found to be in perfect health. Two or three applications of sulphate of copper cause such a contraction of spongy gum as to steady the teeth, and make the operation of removing the tartar comparatively easy, and Mr. Whatford removes it at one, or at the outside two visits.

When cases have been of long standing, it is necessary to apply the sulphate of copper at once for eight or ten successive days to ensure immunity from relapse; there is no risk in careful hands in freely using sulphate of copper; it is better even to overdo it a little to make sure of a good result. In early or slight cases fewer applications will suffice. The caustic should be used as a saturated solution, or in powder. Some little pain results from the use of caustic, and this is greatly relieved by holding cold water in the mouth. It is well to prepare the patient for this irritation, which arises at intervals during treatment, lessening gradually, eventually disappearing. The copper taste can be readily removed by a sip or two of bi-carbonate of soda solution, and almost prevented provided the sip be taken while the powder is lying on the gum, and before it becomes mixed up in the mouth by an attempt to expectorate before the sip is taken. In applying sulphate of copper to the gum of teeth in the lower jaw, the saliva ejector may be used; a teaspoonful of a solution of bi-carbonate of soda is introduced into the mouth as the bulb of the ejector is withdrawn, the patient being told to take a mouthful of water and shake it well about before expectorating.

The properties of sulphate of copper are then considered. It is as a styptic for bleeding surfaces, a stimulant for ulcers, and an escharotic for warts. It is used as a lotion and as an injection to diminish excessive secretions from mucous membranes; ten or fifteen grains in two ounces of water forms a prompt emetic; half an ounce taken into the stomach would probably kill, so that the quantity employed in the treatment of pyorrhœa could hardly produce toxic symptoms, especially if carbonate of soda in solution be employed as is recommended above.

Mr. Whatford prefers sulphate of copper as the remedy to other caustics, because: (1.) Its action apparently involves less loss of tissue, while its curative power seems to equal any. (2.) It does not blacken the teeth as nitrate of silver does, nor act on their structure as acids do, nor spread over more surface than that intended, as chloride of zinc, caustic potash, and some others are liable to do. (3.) Its application, as a rule, causes little pain; its action as a caustic is so limited that the gum freely granulates under its use, and therefore it can, in most cases, be applied daily till cure is apparent without checking these granulations as other caustics are liable to do. (4.) Its continued use leads to no detriment, and in most cases a feeling of relief and comfort arises shortly after its application.—*British Journal of Dental Science*.

BRIDGE-WORK.

DR. L. P. HASKELL'S OPINION OF IT.

Written for the South Carolina Dental Society.

While there are occasional cases where this method is advisable, they are the exceptions. I would instance the case of the loss of a *single* tooth. It would be unfortunate for the patient, as is usually the case, to be compelled to wear a plate just to sustain that tooth; so that a tooth soldered to a bar, the ends of which could be inserted in the adjoining teeth, in gold or even cement fillings, would be perhaps the lesser evil.

But take the case of several teeth attached to two sound teeth, enclosed in gold bands—what results? The cement with which they are finally fastened in place, by constant use of the denture, is loosened and disintegrated, and works out; the secretions flow in, and the tooth is girdled with decay. Next follows the loosening of these teeth by the use of the teeth attached in mastication, so that they are found, in a few years, dangling, ready to fall out. Then there is a certain amount of uncleanness, even in the best adjusted cases; parts that *cannot* be reached to cleanse—and finally, difficulty of repair.

The least objectionable are those cases where they are attached to roots; but here results, in a few years, at most, the loosening of the roots, in consequence of the strain upon them of an entire denture, in the act of mastication; and the patient has been to a heavy extra expense to secure the work (I have known of \$500 being paid), and now it is worthless, and must resort to the inevitable suction plate, which had better have been made at first, certainly as a matter of economy.

In a vast majority of cases where bridge-work is used, a narrow, nicely-fitting gold plate, secured by *properly-adjusted* clasps, upon the same teeth which had been permanently enclosed for bridge-work, would answer the same purpose, and could be readily removed for cleansing, and no harm done to the natural teeth. I have been in the habit of making such plates for forty years, and can testify from this long experience.

When I speak of *properly* adjusted clasps, I mean a narrow (platinum alloyed gold) clasp, nicely adjusted to the tooth, and arranged with wax upon the plate, *in the mouth* (never by a plaster cast). Then invest in the plaster and sand, and solder, attaching *only at one point*, one-eighth of an inch, or but little more, so that the clasp will be springy, and have free play. Then if this is kept clean, it will do no harm to the tooth.

The truth of the matter is, that bridge-work enables the dentist to secure large fees, regardless of the interests of patients—often twice or three times what would be charged for gold plates by the usual process.

The patient, of course, is pleased with the work, never suspecting what is in store in the near future—the loss of valuable teeth, and the final resort to a suction plate.—*Southern Dental Journal*.

A CURIOUS CHRISTMAS BOX.

The relator of the following amusing incident was once visited by a former colleague, who asked how he could give his wife a set of artificial teeth on Christmas Eve without her knowing he was going to do so until the presentation.

The friend assured him that if his wife had but one hollow tooth, he could easily obtain an impression without her knowledge.

Accordingly the lady, who was suffering from toothache, was brought by her husband to consult his dentist friend. After examination, the latter told the lady he could relieve her from any further pain, but in order to get the stopping properly prepared, he would be obliged to make a wax impression of the tooth he was to stop.

The lady was alarmed, and thought this would be a very painful operation, but consented to submit when her self-sacrificing husband promised to be experimented on first by way of re-assuring her.

The following day the lady again appeared, alone this time, and requested the dentist to make artificial teeth for her husband, to replace those he had lost. She also wished to know if he could do so without her husband's knowledge, as she particularly wished to give them to him as a present on Christmas Eve.

Just before the festival, the two packets containing the teeth were sent

off; that with the lady's teeth was taken through the post to the business office of the husband, while the other was addressed to the lady, at their private residence.

The evening came, and with it the double surprise.

Some days after the husband visited his friend and assured him that he should never as long as he lived forget the amusing and astonishing exchange of presents which had taken place on Christmas Eve.—*Zahn-technische Reform*.—*British Journal of Dental Science*.

WHAT DOES ANTISEPTIC SURGERY REQUIRE.—Antiseptic surgery requires that everything that comes near the wound should be perfectly free from germs—fingers, instruments, needles, catgut, drainage-tubes, sponges, coverings, bandages, etc. Nothing is really satisfactory as a means of cleansing the fingers, except corrosive sublimate ($\frac{1}{1000}$); but for instruments, carbolic acid ($\frac{1}{30}$) is efficient. They should be immersed in the solution for a half-hour before the operation.

The skin of the part to be operated on is to be soaped, shaved and scrubbed with a nail-brush with $\frac{1}{1000}$ corrosive sublimate solution.

During the operation the wound is to be well doused with a hot corrosive sublimate solution from $\frac{1}{2000}$ to $\frac{1}{5000}$, according to the surface exposed and the length of the operation. The fluid runs off on a rubber sheet into a pail. The surrounding parts should be covered with towels wrung out in the same solution. Absolute accuracy is essential in every detail. The assistant who hands any instrument must have disinfected his hands as above; nothing must be dropped on the floor, or rubbed on the table or clothes. The sutures of catgut will be absorbed in the wound. The dressings need only be changed once to remove the drainage tube; and, if a tube of decalcified bone (such as manufactured by Grosvenor & Richards) has been used, that also will be absorbed.

The expense is considerable in applying permanent dressings thoroughly; but if a wound has only to be dressed two or three times, instead of ten times as often, it is a wise economy of time and money to use the best, to say nothing of the diminution of the suffering of the patient, and the gain in time.—*Ernest W. Cushing, M. D., Boston, Mass.*

DR. W. A. TRUEMAN says that amalgam will contract or expand according as it is used. If used with too much mercury, it will shrink as well as dissolve; but if employed dry, or in such a condition that it will work well, it would not shrink, and would be less liable to dissolve. A great deal of its behavior is due to the manner in which it is manipulated. He is sometimes afraid to use it very dry in very frail teeth, on account of its expansiveness when employed in that condition.

NEW PROCESS CHLOROFORM.—The late decline in price of chloroform was caused by a new process in the manufacture. This new process is called the "Acetone," which enables the patentees to proceed without the use of alcohol; consequently they are in a position to place supplies at a figure so low that those who have heretofore been producing by the alcohol formula are practically driven from the market.

The patentees state that "The object of this invention is the treatment of residual crude acetates arising from the proper chemical treatment of the products which are received from the decomposition of wood at high temperatures, to obtain products from which chloroform can be produced, and a residual matter, from which latter acetic acid or purified acetates may be obtained." In the chemical work published during the years 1854-1856 by two famous German chemists, namely, Thomas Graham and Fr. Jul. Otto, appeared a formula for manufacturing chloroform from acetate of lime or from acetate of baryta, which seems to resemble closely the new process.

DENTAL SOCIETIES.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The National Association of Dental Faculties held its third annual meeting in the Park Theatre, Niagara Falls, commencing Monday, August 2, 1886, President C. N. Peirce, Philadelphia, in the chair.

The following colleges were represented:

Pennsylvania College of Dental Surgery.—C. N. Peirce.

Chicago College of Dental Surgery.—T. W. Brophy, A. W. Harlan, F. H. Gardiner, J. A. Swasey and L. P. Haskell.

Missouri Dental College.—W. H. Eames and A. H. Fuller.

Boston Dental College.—J. A. Follett.

Philadelphia Dental College.—S. H. Guilford.

University of Pennsylvania, Dental Department.—James Truman.

Baltimore College of Dental Surgery.—R. B. Winder.

Dental Department State University of Iowa.—L. C. Ingersoll and A. O. Hunt.

Dental College of the University of Michigan.—J. Taft and J. A. Watling.

Ohio College of Dental Surgery.—H. A. Smith.

New York College of Dentistry.—Frank Abbott.

Kansas City Dental College.—C. B. Hewitt.

The following additional colleges were admitted to membership:

Minnesota Hospital College, Dental Department.—W. A. Spaulding.

Vanderbilt University, Dental Department.—W. H. Morgan.
University of California, Dental Department.—S. W. Dennis.
Harvard University, Dental Department.—Thomas Fillebrown.
Dental Department of St. Paul Medical College.—L. W. Lyon.

Dr. Winder, Chairman of the Committee on Text-Books, reported verbally that so much opposition to the plan submitted had been expressed last year that he had concluded to let the matter rest until this meeting, so as to get the views of all the schools possible. Since he arrived here he had learned that a much larger number of the profession were in favor of the idea than appeared at Chicago. A work is being prepared under the editorial supervision of Dr. Wilbur F. Litch, but it is an encyclopedia of dentistry, and probably not what we shall require, which is a series of practical text-books. If there is a sentiment in favor of the movement to provide first-class text-books, the next thing to do is to go to work to get them up; but it is a task that cannot be hurried. Such a system of books would make the teaching in the different colleges uniform, and would put money enough into the hands of the publishers to insure the prosecution of the work. He would be a man of considerable temerity who would undertake the preparation of a work on operative dentistry, and the probabilities are that when completed the profession would have taken a step a long way in advance of its teachings. But we must have something, and the best thing we can do will be to get up the best we can.

After discussion, on motion of Dr. Guilford, a committee of five, consisting of Drs. Abbott, Winder, Ingersoll, Guilford and Fillebrown, was elected to take the subject into consideration and prepare suggestions as to the general scope and plan to be followed in the preparation of a series of dental text-books.

Dr. Abbott offered the following resolution, which was adopted and referred to the Executive Committee:

Resolved, That a Standing Committee on Schools be elected, whose duty it shall be to ascertain as far as practicable the workings of all dental schools in this country and Europe, and be required to furnish information to the dean or secretary of any college when desired, and to report in writing at each meeting of this Association.

Dr. Truman offered the following, which was adopted:

Resolved, That the dean of each school be required to furnish the Executive Committee with the exact character of the intermediate examination, and whether any of them are final.

Dr. Truman offered a resolution that the winter terms of all dental colleges members of this Association shall be at least seven months in duration. On motion of Dr. Abbott referred to the representatives of the different colleges with the request that they report upon it next year.

Dr. Guilford was appointed as a committee to codify the rules adopted by the Association and prepare them for publication in the annual announcements of the colleges.

Dr. Fillebrown, Secretary of the Committee on Text-Books, read the report, stating that in the judgment of the Committee text-books are needed on the following subjects: Oral Surgery; Dental Pathology and Therapeutics; Operative Dentistry and Orthodontia; Dental Chemistry and Metallurgy; Dental Prosthesis. Books on other subjects seem to be very well provided for at present. The report recommends that committees be appointed to solicit the writing of such books and to examine the manuscript, and if found acceptable to authorize their publication, as text-books on these subjects, with the indorsement of this Association; that the publication of the various books shall be under the supervision of committees composed of the professors in the colleges of this Association of the particular branch of study to which the book is devoted, or such persons as the faculties may select; that the committees shall have power to solicit writers for the subjects named and to require the books to be written upon a plan acceptable to the committee, and that the final copy be submitted to every member of the committee, and unless it receives the approval of at least three-fourths of the whole committee it shall not be considered approved; that each writer shall be expected to retain the complete ownership of his manuscript and to publish at his own expense and risk.

The report was adopted and the Chairmen of the Committees on Publication were appointed as follows: "Oral Surgery," T. W. Brophy; "Dental Pathology and Therapeutics," James Truman; "Operative Dentistry and Orthodontia," Thomas Fillebrown; "Dental Chemistry and Metallurgy," A. O. Hunt; "Dental Prosthesis," S. H. Guilford.

The following officers were elected for the ensuing year: C. P. Peirce, President; R. B. Winder, Vice-President; H. A. Smith, Secretary; A. W. Harlan, Treasurer; Frank Abbott, James Truman, J. Taft, Executive Committee; Frank Abbott, James Truman, R. B. Winder, Committee to decide questions arising before the next meeting.

Adjourned.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners held its fifth session in the Park Theatre, Niagara Falls, commencing Monday, August 2, 1886, President J. Taft in the chair.

The following State Boards were represented: Ohio, by J. Taft, H. A. Smith and F. H. Rehwinkel; Illinois, by George H. Cushing; Michigan, by A. T. Metcalf, F. W. Clawson and G. S. Shattuck; California,

by S. W. Dennis; Pennsylvania, by S. H. Guilford, W. E. Magill and E. T. Darby; New Jersey, by Fred. A. Levy; Iowa, by J. T. Abbott; Maryland, by T. S. Waters; Louisiana, by Joseph Bauer; Indiana, by S. B. Brown; Wisconsin, by Edgar Palmer.

Officers were elected for the ensuing year as follows: J. Taft, President; H. A. Smith, Vice-President; F. A. Levy, Orange, N. J., Secretary and Treasurer.

AMERICAN DENTAL ASSOCIATION.

The following is the list of officers of the Association elected at Niagara to serve for the coming year:

President.—W. W. Allport, Chicago.

First Vice-President.—George W. McElhany, Columbus, Ga.

Second Vice-President.—S. W. Dennis, San Francisco.

Recording Secretary.—George H. Cushing, Chicago.

Corresponding Secretary.—A. W. Harlan, Chicago.

Treasurer.—George W. Keely, Oxford, Ohio.

Executive Committee.—W. C. Wardlaw, Augusta, Ga.; S. G. Perry, New York City; S. H. Guilford, Philadelphia.

Dr. E. T. Darby, Philadelphia, in place of J. N. Crouse, resigned.

Dr. A. W. Harlan, Chicago, in place of Dr. C. N. Pierce, resigned.

The Southern Dental Association was by vote invited to hold its meeting with the American Dental Association at Asheville, North Carolina, next year.

UNION DENTAL CONVENTION OF THE FIFTH, SIXTH, SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES.

A dental convention of an unusual character and magnitude will be held in Rochester on Tuesday, October 26, 1886, in which the members of the Fifth, Sixth, Seventh and Eighth District Dental Societies of this State will unite.

The programme has not yet been completed, but enough is already determined to announce that an unusual number of interesting papers has been secured, and that all will be done by the committees in charge to give interest and enthusiasm to the sessions.

Arrangements will be made for clinics and the exhibition of dental appliances, as well as for the accommodation and comfort of all who attend, and it is hoped that the dentists of Western New York will show their appreciation of the efforts of the committee by attending the convention in response to the circulars soon to be issued.

MISCELLANEOUS NOTES.

It is believed that strabismus is not due to the presence of a microcock-eye in the blood.

The cutting of India rubber may be greatly facilitated by moistening the knife used with a moderately strong solution of caustic soda.

Brass work may be frosted by boiling in caustic potash, rinsing in clean water, and then dipping in nitric acid till all the oxide is removed; wash quickly and dry in boxwood saw dust and lacquer while warm.

A Soldering Fluid, for brass or iron, composed of a teaspoonful of chloride of zinc dissolved in two ounces of alcohol, will not rust and tarnish, and has no bad odor. We found the above was best made by dissolving fused chloride of zinc in alcohol.

Both Herbert Spencer and Professor Tyndall are subjects of insomnia. This is to be expected after the existing mental labor of both men, during the past several years. Rest being the only cure of such cases, it will be more than likely that it will be a long time before science will be enriched by more of their investigations.

An incisor tooth which was removed from the orbit of a child two years of age, was exhibited by Dr. Ward Cousins at the annual meeting of the Southern Branch of the British Medical Association. It was very perfect in outline and structure, and was regarded not as a product of a dentigerous cyst, but as a specimen of a displaced tooth during an early stage of development.—*The Dental Record*.

In February, in Varsovia, France, a young married woman, aged 27, pregnant, was reported to have died very suddenly, and was buried. Later it was suspected that she had been killed, and her body was exhumed. When the coffin was opened it was found that the mother had been buried

alive, and had given birth to an infant fully developed before her death.—*Chicago Medical Times*.

A California Court refused to admit medical works in evidence upon the ground that "Medicine is not considered as one of the exact sciences. It is of that character of inductive sciences which are based on data which each successive year may correct or expand, so that what is considered a sound induction last year may be considered an unsound one this year, and the very book which evidences this induction, if it does not become obsolete, may be altered in material features from edition to edition, so that we cannot tell, on citing from even a living author, whether what we read is not something that this very author now rejects."

A Rival of Pasteur.—A Spanish physician has lately discovered that inoculation with the virus of certain snakes is a preservative against hydrophobia in men and animals. He has made a vast number of observations on dogs that have been bitten by vipers, and has found that they are incompetent to take the disease when afterward bitten by hydrophobic dogs. Vaccination with this virus produces little or no inconvenience, only a temporary malaise with trifling fever. Up to the present time his experiments have proven entirely successful, and bid fair to rival in value the results obtained by Pasteur (?).—*Medical World*.

Improved Method of Operating for Cleft Palate.—A correspondent writes to *The Lancet*, concerning what he considers a great improvement in the operation for cleft palate. Hitherto great difficulty and not a little danger have arisen from hemorrhage during the operation, necessitating frequent and very skillful assistance, periodical discontinuation of the anæsthetic, and distinct intervals in the performance of the operation. In addition to these,

other and minor troubles are experienced. All these difficulties may be avoided, and the operation rendered perfectly safe and easy, by the simple process of inversion as applied to the head only. This can easily be attained by bringing the patient's shoulders well up to the end of the operating-table, and allowing the head to hang over the edge in the fully extended position. In this position the roof of the mouth would be horizontal or slightly inclined downward towards the operator, who should stand at the head of his patient. The anæsthetic is given through the nose by a small tube,

and is quite out of the way of the surgeon. Only one assistant is required, who should stand to the left of the operator. In paring the edges, no change of hands is required, but the corresponding hand should be used in elevating the tissues of the hard palate, and in passing the sutures. Under these circumstances no blood can enter the larynx or œsophagus, the palate remains unobscured by blood, and whatever hemorrhage occurs finds its way into the nasal cavities, and at the conclusion of the operation may be emptied by simply turning the patient's head to one side.

BOOKS RECEIVED.

THE AMERICAN SYSTEM OF DENTISTRY, IN TREATISES BY VARIOUS AUTHORS. Edited by Wilbur F. Litch, M. D., D. D. S., Professor of Prosthetic Dentistry, Therapeutics and Materia Medica in the Pennsylvania College of Dental Surgery, Philadelphia. In three royal octavo volumes, containing about 900 pages each, with about 1,500 elaborate illustrations. Price per volume, cloth, \$6.00; leather, \$7.00; half Morocco, gilt top, \$8.00. For sale by subscription only. Volume I.—Regional and Comparative Dental Anatomy, Dental Histology and Dental Pathology. Ready August, 1886. Volume II.—Operative Dentistry, Dental Metallurgy and Prosthetic Dentistry. Ready January, 1887. Volume III.—Anæsthesia, Dental Materia Medica, Oral Pathology, Oral Surgery, Physiology of Digestion, Voice and Speech, and Dental Jurisprudence. Ready June, 1887. Philadelphia: Lea Brothers & Co., Publishers.

Volume I. of the above work is just issued, but received too late for an extended notice. From the prospectus, issued some time since, we were led to anticipate a work of considerable magnitude and ability. There is no occasion for disappointment, as the volume now issued is in every way a magnificent one, and in many respects exceeds the promises of the editor and publishers. As far as our observation goes, this is not a compilation from old and obsolete text-books, but fresh essays by competent and experienced teachers.

The writers in the first volume are M. H. Cryer, M.D., D.D.S.; Albert P. Brubaker, A.M., M.D., D.D.S.; W. H. Dall; Jacob L. Wortman, M.D.; W. Xavier Sudduth, M.D., D.D.S., and G. V. Black, M.D., D.D.S.

The extent of the entire work is partly explained in the subjoined, taken from the prospectus. It will be seen that the publishers promised a volume of about 900 pages; whereas their liberality has increased it to 1,034 pages.

"It has long been a matter of national pride that Dentistry, though as old as history itself, yet owes its practical and scientific advancement mainly to the labors and researches of our own countrymen during the last two generations. Within this brief period its progress has been so rapid that to understand and expound the whole extent of the subject is already far beyond the powers of any single mind or pen. To the further dissemination of dental learning, however, the gathering of this widely scattered mass of knowledge into a compact and orderly body is essential, and a work which will accomplish this end promises to mark an era in the science by reflecting its present position and indicating the direction in which future research is likely to prove most successful. * * * A consideration of

the plan as a whole will moreover show that the scope and arrangement of the work are such as to present a complete and systematic exposition of the entire Science and Art of Dentistry. So vast has been the amount of indispensable material thus obtained, that it was deemed impracticable to present it in less than three extra-sized octavo volumes of about 900 pages each. The series of illustrations, numbering about 1,500 woodcuts, will long be memorable for beauty as well as liberality, and having been largely executed under the supervision of the authors themselves, the individual engravings may be relied on for entire accuracy. In every particular of type, paper, printing and binding the publishers have studied to make the work a pleasure to the reader and a lasting ornament to his library."

Subscriptions for this book can be sent directly to the publishers.

QUARTERLY BULLETIN of the Clinical Society of the New York Post's Graduate Medical School and Hospital. New York: 220 East 20th street.

HOMŒOPATHY, AS VIEWED BY A MEMBER OF THE MASSACHUSETTS MEDICAL SOCIETY. An address delivered April 15, 1886, before the Hahnemann Society of the Boston University School of Medicine. By Vincent Y. Bowditch, A. B., M. D. (Harv.), President of the Boylston Medical Society of the Harvard Medical School, 1884-5.

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY, held at Rock Island, May, 1886.

AN ADDRESS, delivered June 30, 1886, before the Alumni Association of the Department of Medicine and Surgery of the University of Michigan. By Charles J. Lundy, A. M., M. D.

DENTAL PATENTS.

ISSUED FOR THE QUARTER PRECEDING THE DATE OF THIS JOURNAL.

- 344,302—June 22, 1886.—DENTAL HEAD REST.—Thomas J. Larrick, Baltimore, Md.
 344,328—June 22, 1886.—DENTAL COTTON HOLDER.—Arthur C. Runyan, Bangor, Michigan.
 344,688—June 29, 1886.—DENTAL BREATH GUARD.—Carolus P. Southwell, Milwaukee, Wis.
 344,726—June 29, 1886.—PORTABLE ADJUSTABLE HEAD REST.—George E. Dalton, St. Louis, Mo.
 344,796—June 29, 1886.—HEAD REST.—Joshua W. Trussell, Rockland, Me.
 345,718—July 20, 1886.—INHALER AND RESPIRATOR.—Corydon W. Musson, Toledo, O.
 345,883—July 20, 1886.—VULCANIZER.—Maskell F. Carll, Providence, R. I.
 346,312—July 27, 1886.—ARTIFICIAL TOOTH.—John J. R. Patrick, Belleville, Ill.
 346,316—July 27, 1886.—ARTIFICIAL TOOTH CROWN.—Cassius M. Richmond, New York, N. Y.
 346,331—July 27, 1886.—DENTAL DISK.—Benjamin W. Teague, Aiken, S. C.
 347,544—August 17, 1886.—ARTIFICIAL DENTURE.—James L. Williams, Phila., Pa.
 347,567—August 17, 1886.—DENTAL PLUGGER.—Arthur W. Browne, Westfield, N. Y.
 347,828—August 24, 1886.—DENTAL PLUGGER.—Henry C. Register, Philadelphia, Pa.
 347,933—August 24, 1886.—ARTIFICIAL TOOTH CROWN.—Charles P. Grout, New York, N. Y.
 347,934—August 24, 1886.—DENTAL BRIDGE.—Charles P. Grout, New York, N. Y.
 347,975—August 24, 1886.—ARTIFICIAL TOOTH CROWN.—Eli T. Starr, Philadelphia, Pa.

- 347,976—August 24, 1886.—DENTAL IMPRESSION CUP.—Eli T. Starr, Philadelphia, Pa.
348,131—August 24, 1886.—DENTAL DRILL—Samuel J. Lea, Chattanooga, Tenn.
348,173—August 24, 1886.—ADJUSTABLE CHAIR.—Eli T. Starr, Philadelphia, Pa.
348,628—September 7, 1886.—DENTAL MATRIX.—Austin C. Hewett, Chicago, Ills.
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Second-Hand and Shop-Worn Goods FOR SALE CHEAP.

MISCELLANEOUS.

- Wood Polishing Points. Manufactured by the patentee, Dr. Southworth. 100 in a box. Price, \$1.25; will sell for 50 cents per box.
One Lot Jarvis Separators. Will sell for 50 cents each.
One Lot Johnston Bros. Reflectors, to attach to Rubber Dam Clamps, throwing light into cavities. List price, \$2.75; sell for \$1.50 each.
One Pair Plate Benders, as shown on page 290 S. S. White's Catalogue. \$1.50.
One Pair Pin Heading Forceps. \$1.50.
One Lot Ross Polishing Powder, for polishing Rubber Plates. Put up in 1-lb. boxes. Per box, 15 cents.
One Lot Pin Racks, for Snow & Lewis' Automatic Points. Curved, to hold 18 points and square, to hold 24 points. Each, 50 cents.
One Blake's Duct Compressor. \$1.50.
Aluminum Solder, per ½ ounce, 50 cents.
One Lot Bur Gauges, nicely Nickel-plated. Each, 25 cents.
Plate Tooth Holder, to hold Teeth while grinding. Each, 15 cents.
Blodgett's Tooth Wash. Per dozen, 25 cents.
One Brass-Bound Mahogany Case, 16½ x 11 x 4¼ inches, as shown on page 212 S. S. White's Catalogue. Without trays. Cost, \$20.00; will sell for \$10.00.
One Rolling Reclining Invalid Chair, in perfect order. Cost, \$36.00; sell for \$25.00.
One Archer Chair, with Foot-stool attached, Crane, Table and Spittoon. Newly recovered and varnished. In first-class condition. \$45.00.
One Haid Electric Mouth Lamp, complete, with battery. \$5.00.

INSTRUMENTS.

- One Lot Teeth Forceps, oval-jointed, of different makes, and a variety of shapes, all new. Per pair, \$1.50.
One Pair Wedge Cutters. \$1.50.
One Pair Plugging Forceps. \$1.50.
One Pair Fulcrum Forceps. \$1.50.
One Job Lot Steel-Handled Pluggers and Scalers, various makes, nearly all the different shapes used. Per doz., \$3.00.
These instruments are of just as good material and temper as any now made, but the handles are of different shapes and sizes.
One Shell-Handle Single Blade Pocket Lancet. 50 cents.
One Johnston Cone Journal Hand Piece, in perfect order. \$7.00.
One Left-handed Lower Molar Forcep, Nickel-plated. \$1.00.
Two Left-handed Upper Molar Forceps (right and left side), Nickel-plated. Each, \$1.00.

DENTAL BOOKS.

One Tyson's Cell Doctrine. 75 cents.

One Huxley Elementary Lessons in Physiology. 50 cents.

MACHINERY.

One Glycerine or Hot-Air Celluloid Apparatus. Cost, new, \$8.00; will sell for \$3.00. This will make an excellent flask press, having an iron pot in which the flask can be simultaneously boiled and pressed.

One Forty-Gallon Gasometer. \$10.00.

One Hand Lathe. \$2.00.

One Gas Apparatus, consisting of 100 gallon Cylinder, S. S. White Inhaler, Gas-bag and Tripod. All new, except Tripod. \$29.00.

FOR SALE.

ONE SECOND HAND SEABURY VULCANIZER.

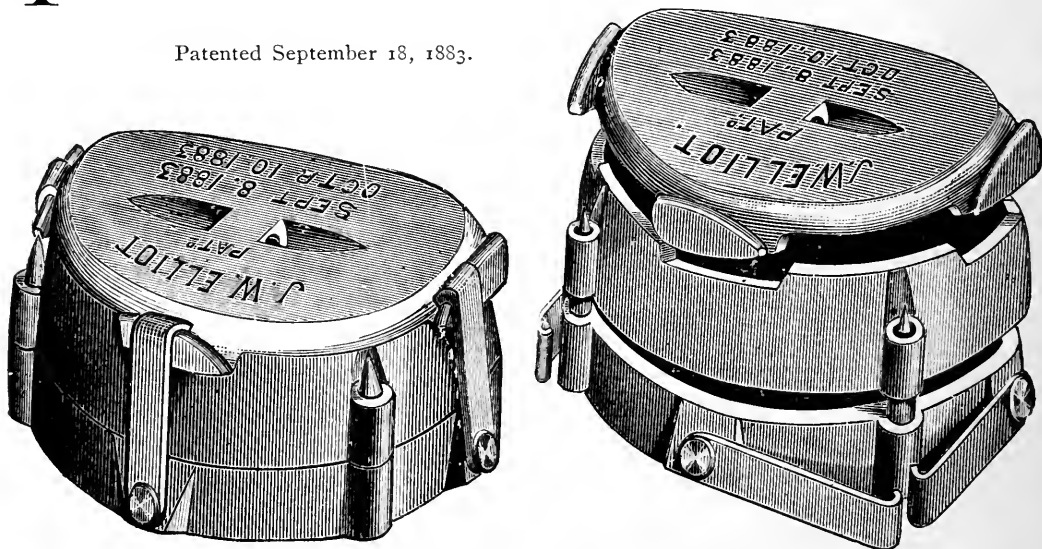
IN PERFECT ORDER. BEEN USED BUT A SHORT TIME.

PRICE, for Gas, without Flasks, \$18.00.

BUFFALO DENTAL MANUFACTURING CO.

THE · ELLIOT · FLASK.

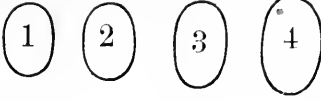
Patented September 18, 1883.



The clasps swing over inclines or lugs on the cover, and hold the parts of the flask tightly together. The lugs are put below the surface, that the flask may be placed either side up. The guide pins are steel, full size, and parallel, so that the parts are sure to return to place. The flask can be carried when hot by a wire hook, which can be passed through the hole in a section of the cover from the two opposite depressions. (See engraving.) The flask is used for rubber or celluloid.

PRICE: Elliot Flask, brass, \$1.50

BUFFALO DENTAL MANUFACTURING CO.



Gold Crowns

THE SHAPE OF THE NATURAL TEETH.



A SEAMLESS band of very soft 22 c. gold forms the neck and body of the Crown, and an 18 c. cap the masticating surface.

The cuts show some of the sizes (at the neck) in which they are made. Any size can be furnished.

PRICES—Bicuspid, each, . . \$3.00
Molars, each, . . . \$4.00

Sent by mail on receipt of price. Order by the number of the cut, or send articulating model, and crown will be fitted to it without extra charge.

E. O. WILBUR,
Thompsonville, Ct.

UNSOLICITED TESTIMONIAL.

Buffalo Dental Manufacturing Co.:

DEAR SIRS—Please send me a new curved point to the Lewis Abscess Syringe. This is the only perfect syringe for this work that I have ever seen. I have had it in use ever since it was put in market, and it has never failed to work. The idea of having a syringe with a small barrel never occurred to me in connection with the teeth till I saw this one, though I have used such a syringe in connection with the microscope for some time.

Yours sincerely,

WILLIAM HERBERT ROLLINS.

250 Marlborough St., Boston, Mass.

September 10, 1886.

FLETCHER'S Gas • Heating • Apparatus



The BUFFALO DENTAL MANUFACTURING CO. are sole manufacturers in the United States, and owners of patents, of **Fletcher's Gas Heating Apparatus**, as applied to Chemical Laboratory, Household, or other purposes.

They are prepared to supply any form of Special Burners for Gas or Gasoline for manufacturers or experimenters, in addition to their regular stock.

Correspondence solicited for Special Gas Apparatus.

CATALOGUES FREE ON APPLICATION.

DOUBLE • CHAMBER • VULCANIZER.



The Buffalo Dental Manufacturing Company's DOUBLE CHAMBER VULCANIZER

PATENT APPLIED FOR.

IN this machine the vulcanizing chamber is surrounded by an annular steam chamber, communication being made between the two by a valve.

The tapering bottom of the vulcanizing chamber is exposed to the direct heat of the flame, the parts being so proportioned, that while dryness is secured, there is **no possibility of overheating the plate.** The deposition of water in the vulcanizing chamber, so often found in other double chamber vulcanizers, is entirely avoided.

The vulcanizer is **very strong and heavy**, being capable of bearing a pressure of **500 lbs. to the inch.** It is furnished with a safety apparatus which, if kept in order, will preclude any possibility of an explosion.

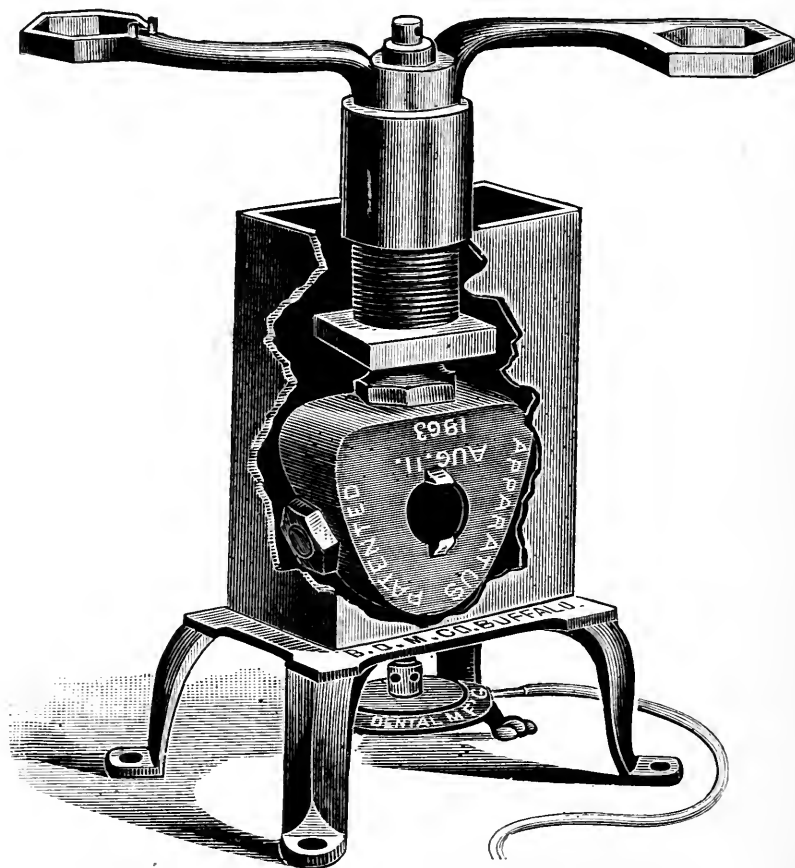
This vulcanizer is the result of a series of experiments instituted to perfect the double chamber vulcanizer, and it is believed to be the **most efficient machine of the kind yet produced.**

The communication between the two chambers can be closed, the vulcanizer opened, and the flasks removed and replaced without letting down the steam.

The Coolidge Gas Regulator can be attached to this vulcanizer if desired.

PRICE, FOR GAS, WITHOUT FLASKS, \$30.00

The Howell Rubber Packer.



THIS apparatus was brought to the notice of the dental profession, and a number of them sold, some twenty years ago. They are highly esteemed by those who use them and are acquainted with their merits.

In the illustration, the side of the water-bath is broken away, showing the flask and injector in position. The flask is closed, without being packed; and the rubber is contained in the injector, to which the flask is screwed. The apparatus is then put in the water-bath, to which heat is applied. When the water is boiling, the rubber is injected into the flask by means of a piston operated by the screw and wrench, as shown in the engraving.

The advantages of this apparatus are, that a much closer articulation may be secured, and that there is much less risk of breakage of section teeth, when ground thin and set closely against the gum.

PRICES. — Howell Packer, complete, with one Flask and Gas or Alcohol Burner, \$15.00
 Extra Flasks, 2.50

BUFFALO DENTAL MANUFACTURING CO.

Directions for Howell Rubber Packer.

Fill the lower half of the flask with plaster, and set the case in the usual way, providing for a parting by using varnish and oil, or soap.

Put on the upper half of the flask and secure it by screwing on the three nuts. Put the screw plug into the hollow nipple. Fill the flask with plaster through the hole in the top, rattling it against the bench to drive out the air bubbles. After the plaster is hard, open the flask and remove the base-plate.

Cut a small relief-gate, leading from the rim of the plate in front, *to the notch in the edge of the flask*. This should be made with a V cut, about one-eighth of an inch deep and wide, and *must* communicate freely with the mould; so that the rubber can pass into it and escape from the flask.

The proper cutting of this escape-gate is an important matter, and it should not be neglected.

Cut a gate-way for the introduction of the rubber; commencing the full size of the hollow of the nipple into which the force-pump is to be screwed, and gradually tapering into a sheet-gate of nearly the full width and thickness of the back edge of the plate, if it is for the upper jaw. For a lower plate, make the gate Y shaped; one branch of the Y going to each heel of the plate. These should be made by a V cut at least one-fourth of an inch wide and deep. The whole gateway should be smoothly cut, without sharp angles, and of such a general shape that there will be no chance for particles of plaster to be dislodged by the rubber as it passes into the mould.

Free the mould from all particles of wax and loose plaster, by washing it in a stream of boiling water. Then close the flask and screw on the nuts.

Open the force-pump, and fill it with strips of rubber rolled into as large a cylindrical mass as it will contain. Replace the piston and screw it down by hand as far as it will go.

Screw the pump into the nipple on the flask, turning the squares so they will be parallel with the sides of the flask. Put the flask into the water-tank, and pour in hot water until it is nearly full. Light the gas under the tank, place the wrench on the pump, as shown in the cut. When the water boils, turn the wrench, a little at a time, so as to force the rubber into the mould. This must be done cautiously, and when resistance is felt, a little time should be allowed for the rubber to yield before another movement is made.

Insert a piece of wire, or an old excavator into the hole in the piston-rod above the squares upon which the wrench fits, and by this means withdraw the flask from the tank occasionally for inspection. When rubber is seen in the escape-gate, the mould is filled.

Then remove the pump from the flask, and screw in the plug, and the flask is ready for the vulcanizer. Fasten the water-tank firmly to the bench before commencing operations.

ENDLESS VULCANIZER PACKING.

There has been some demand for an endless packing for the Whitney Vulcanizer, and we have at last succeeded in obtaining some, equal in quality and similar in structure to the packing strips commonly used. There are rubber rings sold as endless packing, which are wholly unsuitable for the purpose. These can be relied upon as a good article.

PRICE, . . . 8 CTS. EACH.

AKRON DENTAL RUBBER.

The material of which this Rubber is composed is prepared by a new process, which insures

ABSOLUTE PURITY,

RESULTING IN A PRODUCT OF
WONDERFUL

DENSITY, FINENESS AND STRENGTH.

It is especially designed to meet the requirements of those who seek to produce the most perfect and artistic work. It is exceedingly tough and light, and takes a beautiful polish. Plates may be made very thin without splitting or crumbling away about the edges. It can be used with the best results for making

PARTIAL LOWER DENTURES,
an advantage which no other rubber possesses. It has the unqualified approbation and endorsement of the profession everywhere, and never fails to give satisfaction.

PRICE, \$3.00 PER POUND.

For Sale by BUFFALO DENTAL MFG. CO.

MERCURY . . . Re-Distilled.



The purer the Mercury used in preparing amalgam, the greater the assurance of a successful operation.

• The B. D. M. CO'S •
Re-Distilled • Mercury

IS AS PURE AS CAN BE
PROCURED.

PRICE PER BOTTLE, . . . 40 CENTS.

THE TRADE SUPPLIED.

REDUCTION IN PRICE.

• FLETCHER'S •
Gutta • Percha • Hydraulic
• CEMENT. •

PRICE PER CAKE, . . \$1.00

SCIENTIFIC AMERICAN ESTABLISHED 1846

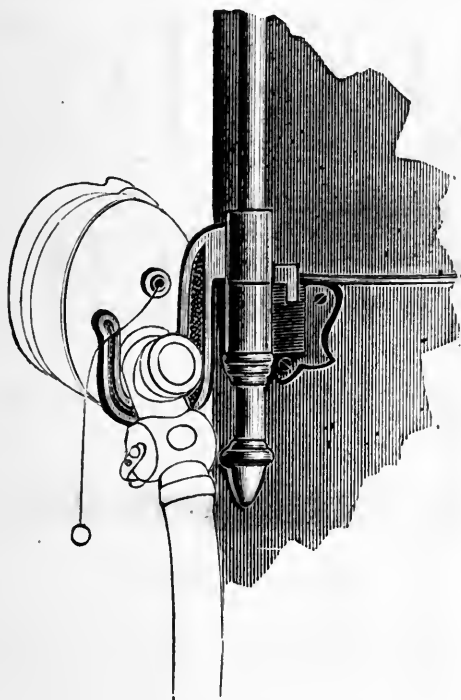
The most popular **Weekly** newspaper devoted to science, mechanics, engineering discoveries, inventions and patents ever published. Every number illustrated with splendid engravings. This publication furnishes a most valuable encyclopedia of information which no person should be without. The popularity of the SCIENTIFIC AMERICAN is such that its circulation nearly equals that of all other papers of its class combined. Price, \$3.20 a year. Discount to Clubs. Sold by all newsdealers. MUNN & CO., Publishers, No. 361 Broadway, N. Y.

PATENTS. Munn & Co. have also had **Thirty-Eight years'** practice before the Patent Office and have prepared more than **One Hundred Thousand** applications for patents in the United States and foreign countries. Caveats, Trade-Marks, Copy-rights, Assignments, and all other papers for securing to inventors their rights in the United States, Canada, England, France, Germany and other foreign countries, prepared at short notice and on reasonable terms. Information as to obtaining patents cheerfully given without charge. Hand-books of information sent free. Patents obtained through Munn & Co. are noticed in the Scientific American free. The advantage of such notice is well understood by all persons who wish to dispose of their patents. Address MUNN & CO., Office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INHALER SUPPORT

FOR ATTACHMENT TO

Lewis • Gasometer



The above illustrates a hook to be slipped on one of the upright guide rods of the Lewis Gasometer, for holding the Mouth-piece or Inhaler when not in use. The hook will hold any Inhaler in the market, and can be attached to any gasometer of our manufacture. It will be found a great convenience.

PRICE.

Inhaler Support, nickel-plated, . . 50 cts.

MOREY Nerve and Crown Drills.

PATENTED NOV. 25, 1884.

These efficient drills are now on sale and can be furnished at the following prices :

6 Nerve drills (straight), . . .	\$3.00
6 Right Angles,	3.00
3 Crown,	1.50
1 with Cutting Point, . . . . .	.50
Price, complete set,	\$8.00
or 50 cents each.	

BUFFALO DENTAL MF'G CO.

• CAUTION! •

OUR attention has lately been called to the fact that imitations of some of the accessories of our vulcanizing apparatus have been put on the market; and some of them, unfortunately, are of such poor quality that they cannot possibly be anything but a disappointment to the purchaser. This is especially the case with the Whitney and Hayes Packings. Samples of the former, which we have seen, are utterly worthless, and the latter is of very inferior quality.

Our Laboratory Gas Burner has also been widely imitated; and as the parties making them are not conversant with the principles involved in making a good gas burner, the imitations are not satisfactory to the user, and we have to take the blame. We therefore repeat the notice given heretofore, that our flasks and our Laboratory Gas Burner have our firm name, or the initials, B. D. M. Co., cast or stamped upon them; our flask bolts are put up in wrappers bearing our imprint, and hereafter our Whitney and Hayes Packings will be stamped with our firm name.

BUFFALO DENTAL MFG. CO.

ANOTHER "NEW DEPARTURE."

Educate your Patients. Teach them that the possession of a good set of teeth rests very largely with themselves — which is true. A SENSITIVE POINT will do this, if read by your patrons, thereby saving you valuable time and great annoyance. It was written after thirty years' successful dental practice, and will introduce the subject now too long neglected by our profession. It answers questions, makes suggestions, and gives advice to our patients on matters relating to the teeth. Send 10 cents for the book (32 pages) and terms. 1,000 copies free, printed in your own name. *It will pay you to investigate this subject.*

CHAS. HOUGHTON, Dentist,

BATAVIA, N. Y.

NITROUS THE LEWIS ❖ OXIDE

GASOMETER.



THE

Best and Most Convenient

FOR THE PRICE

YET PRODUCED.

Made of the Best Galvanized
 Iron, highly and artistically
 ornamented. All bright
 parts nickel-plated.

IT IS FITTED FOR EITHER A 100
 OR 500 GALLON CYLINDER.

Contains an effective Water Seal.

FOR SALE BY ALL DEALERS
 IN DENTAL GOODS.

MANUFACTURED ONLY BY

BUFFALO DENTAL MFG. CO.,

Court St., corner of Pearl,

BUFFALO, N. Y.

• • • • • • •

Fletcher's • Asbestos • Fire

❁ FOR PRODUCING A PLEASANT RADIATED ❁
HEAT FOR WARMING APARTMENTS.

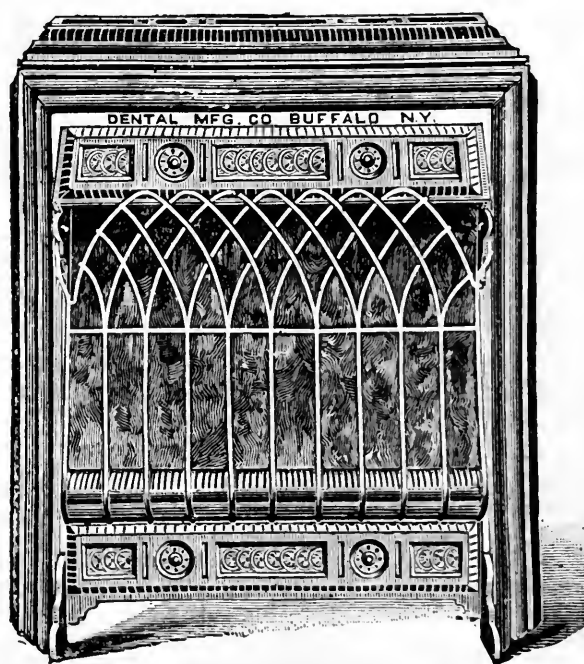
BEST IMITATION OF A COAL GRATE FIRE YET PRODUCED.
INVALUABLE FOR DENTISTS' OPERATING ROOMS.

A gas flame, from a special form of the Patent Radial Burner, streams up against a perpendicular fire surface of Asbestos fibre, which is almost instantaneously brought to an intense heat, giving a large percentage of the full effect due to the gas burnt.

The radiant heat evolved from the Fletcher Asbestos Fire renders it peculiarly applicable as a Foot warmer, to place near the chair in dental operating rooms. Its use for this purpose has been very satisfactory, and is highly commended.

If used occasionally, and for a short time only, the products of combustion may be allowed to escape directly into the apartment; but for continuous use suitable flue connection should be made, as all gas heating apparatus, if used in small apartments without ventilation, will vitiate the air to a certain extent.

Gas consumption, about fifteen feet per hour.



Patented January 1, 1884.

Dr. G. C. DABOLL, BUFFALO, ARE USING THE ASBESTOS
Dr. W. C. BARRETT, BUFFALO, GAS FIRES IN THEIR OFFICES

PRICE: Fletcher's Asbestos Fire, \$10.00
With Front, Sides and Top Nickel Plated,, . . . 15.00

MANUFACTURED ONLY BY THE **BUFFALO DENTAL MANUFACTURING CO.**

FLETCHER'S • AMALGAMS •

• MANUFACTURED • BY •

THOS. FLETCHER, F. C. S., WARRINGTON, ENG.



THE METALS USED IN FLETCHER'S AMALGAMS ARE REDUCED DIRECT FROM THEIR SALTS, AND ARE CHEMICALLY PURE. "COMMERCIALLY PURE" METALS ARE NEVER USED. THEY ARE THE ONLY ALLOYS WHICH ARE AND HAVE BEEN, FROM THE FIRST, TESTED INGOT BY INGOT FOR ALL NECESSARY PROPERTIES, AND THEIR UNIFORMITY ABSOLUTELY GUARANTEED. UNTIL THE INTRODUCTION OF THESE ALLOYS, AMALGAMS NEVER WERE TESTED FOR ANY PROPERTIES. THESE AMALGAMS ARE STRICTLY FIRST-CLASS, AND GUARANTEED AS REPRESENTED IN EVERY PARTICULAR.

FLETCHER'S PLATINUM AMALGAM

PLATINUM AND GOLD ALLOY, \$4.80 PER OZ.

IS REMARKABLY FREE FROM DISCOLORATION IF FINISHED AND POLISHED. PRODUCES PLUGS ABSOLUTELY MOISTURE TIGHT. DOES NOT DISCOLOR THE TOOTH SUBSTANCE, AND MAY BE RELIED UPON AS A THOROUGHLY TRUSTWORTHY FILLING MATERIAL. REQUIRES A VERY SMALL PROPORTION OF MERCURY.



JAMES V. LEWIS,

GENERAL WHOLESALE AGENT FOR
FLETCHER'S FILLING MATERIALS
FOR THE UNITED STATES,

No. 15, COURT STREET,

BUFFALO, N. Y.

EXTRA PLASTIC AMALGAM.

AN ADHESIVE VARIETY OF THE PLATINUM AMALGAM,
\$5.00 PER OZ.

A SMOOTH, EXTREMELY PLASTIC VARIETY, DESIGNED FOR USE IN POSITIONS WHERE THOROUGH PLUGGING IS A MATTER OF DIFFICULTY. IT IS LARGELY USED IN CONNECTION WITH THE ARTIFICIAL DENTINE FOR THE APPARENTLY MOST HOPELESS CASES. FREE FROM DISCOLORATION.

FOR SALE BY BUFFALO DENTAL MANUFACTURING COMPANY.



ULARISTON

A SUPERIOR MOUTH-WASH.

This preparation is an improvement on a popular wash, and contains in its present form all the qualities that go to make a faultless mouth-wash for family use.

The stimulating effect imparted to the gums and mucous membranes by the use of this wash is believed to be superior to that of most washes in the market.

For sale by all dealers in dental goods.

PRICES.

Per Bottle,	\$0.40
" doz.,	4.00
" $\frac{1}{4}$ gross,	10.80
" $\frac{1}{2}$ gross,	20.40

BUFFALO DENTAL

Manufacturing Co.

REDUCTION IN PRICE.

On and after January 1, 1885, the price of the SNOW & LEWIS

AUTOMATIC PLUGGER

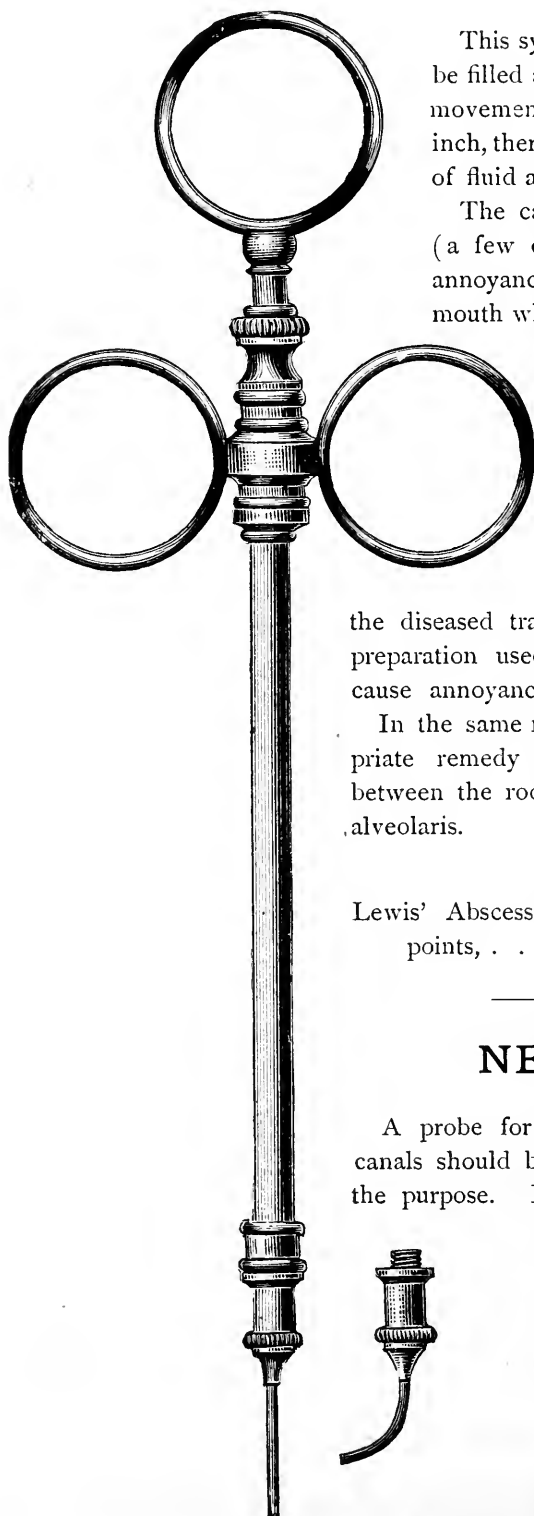
WILL BE REDUCED TO \$9.00.

BUFFALO DENTAL MANUFACTURING CO.

THE LEWIS ABSCESS SYRINGE

FOR TREATMENT OF

Alveolar Abscess, Pyorrhœa Alveolaris, etc.



This syringe is so constructed that it can be filled and operated with one hand. The movement of the piston is but $\frac{1}{4}$ of an inch, thereby taking up the desired quantity of fluid and no more.

The capacity of the syringe is so small (a few drops only) that it obviates the annoyance of cauterizing the inside of the mouth when using creosote or other strong medicines.

By using a drill of the same size as the syringe point, its whole contents can be discharged into the pulp canal and through the apical foramen and into the fistulous sinus, thoroughly medicating the diseased tract without allowing any of the preparation used to escape into the mouth to cause annoyance to the patient.

In the same manner a few drops of the appropriate remedy may be placed in the pocket between the root and gum in a case of pyorrhœa alveolaris.

PRICE.

Lewis' Abscess Syringe, with two gold points, \$3.50

NEW PROBE.

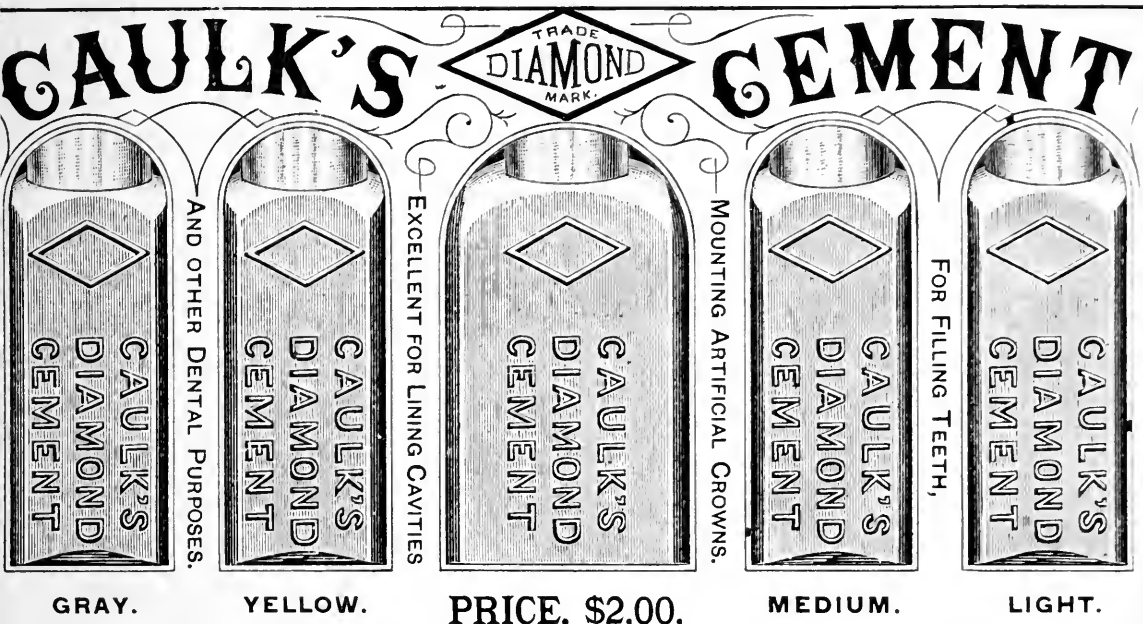
A probe for introducing dressings into root canals should be of the right size and temper for the purpose. It should be elastic, yet not so hard as to break, and fine enough to carry cotton to the end of the canal. The one illustrated is made of piano wire, which combines elasticity and toughness in a surprising degree.



PRICE.

Piano Wire Probe, each, . . 25 cents.

CAULK'S FILLING MATERIALS. ESTABLISHED 1877.



GRAY.

YELLOW.

PRICE, \$2.00.

MEDIUM.

LIGHT.

TWO COLORS.—Gray and Yellow, \$1.50 per Package.

ONE COLOR.—Gray, Medium, Yellow, or Light, 1.00 " "

THIS COMPOUND NOW STANDS WITHOUT A RIVAL. From Five to Seven Years' Test by leading Dentists throughout the World has proved it to be all that has been claimed for it.

FOR MOUNTING ARTIFICIAL CROWNS—It has been highly recommended, is non-irritating, non-conducting, and in harmony with tooth structure.

IT WILL HARDEN IN WATER OR SALIVA. It does not deteriorate with age. We have some over THREE YEARS OLD, and it works as nicely as when first made. The liquid does not crystallize, and we have increased the quantity in all packages. All bottles are lettered with "CAULK'S DIAMOND CEMENT."

The Universal Verdict is that CAULK'S DIAMOND CEMENT IS THE BEST. A Fair Trial will convince you.

.. CAULK'S . PAR . EXCELLENCE . ALLOY ..

THIS GOLD and PLATINA ALLOY IS MANUFACTURED on a NEW PRINCIPLE. SAVES TEETH WHERE OTHERS FAIL.

It is the result of a long series of experiments, and has been in constant use for several years. By our new method of manufacture there is no GUESS WORK, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

PRICE, in 1-3, 1-2 and 1 oz. packages, per oz., \$3.00; 2 oz., 5.00.

.. CAULK'S . WHITE . ALLOY ..

HAS BEEN GREATLY IMPROVED, COSTING MORE TO PRODUCE IT. THERE IS NOTHING EQUAL OR SUPERIOR TO IT.

Is of a peculiar grayish-white color. When amalgamated in the hand it works with a soft and velvety feeling. Is very DENSE, and so malleable that it can be malleted with the greatest ease. Has been highly recommended in Combination Fillings of Gold and Amalgam. When properly manipulated with PURE MERCURY it will retain its color under all circumstances.

PRICE, in 1-4, 1-2 and 1 oz. packages, per oz., \$4.00; 2 oz., \$7.00.

.. CAULK'S . DIAMOND . POINT . STOPPING ..

This form of Gutta-percha having been in the market for several years, has stood the greatest test of all—that of time. It is regarded as the best preparation of its kind for filling teeth in the world.

The stopping is put up in *sealed envelopes*, and the Pellets and Cylinders in *sealed boxes*, each bearing a fac simile of our signature.

PRICE, in 1-8, 1-4, 1-2 and 1 oz. packages, per oz., (reduced to) \$2.00.

We make a Specialty of Manufacturing these Materials for Filling Teeth, and they are Sold by Troy Weight.

OVER FIFTEEN THOUSAND (15,000) Dentists are using these materials throughout the world. What better evidence do you wish of their Superiority and Excellence.

L. D. CAULK, Manufacturer & Proprietor, CAMDEN, Delaware.

SOLD AT ALL DENTAL DEPOTS.

SAMSON RUBBER

MANUFACTURED BY

EUGENE DOHERTY,

Nos. 417 & 419 Kent Ave., Brooklyn, E. D., New-York.

WARRANTED TO BE

THE STRONGEST AND MOST UNIFORM RUBBER MANUFACTURED.

It is the TOUGHEST and Most Durable Rubber Made. Vulcanizes same as Ordinary Rubber.

TO DENTISTS,
IN LOTS OF
TEN POUNDS
AT ONE TIME,
10 PER CENT. OFF
RETAIL PRICE.

SAMSON RUBBER.



MANUFACTURER OF ALL KINDS OF

DENTAL RUBBERS AND GUTTA PERCHAS.

PRICE LIST OF DENTAL RUBBERS AND GUTTA PERCHAS.

No. 1 Red Rubber, per lb.,	\$2.25	No. 1 Red Weighted Rubber, per lb.,	\$4.00
No. 2 Red Rubber, per lb.,	2.25	No. 2 Red Weighted Rubber, per lb.,	4.00
Samson Rubber, per lb.,	2.75	Black Weighted or Amalgamated	
Black Rubber, per lb.,	2.25	Rubber, per lb.,	4.00
Flexible or Palate Rubber, per lb., .	2.75	Weighted Gutta Percha, per lb., . .	4.00
Gutta Percha for Base Plates, per lb.,	2.25	Adamantine Filling or Stopping, per	
Vulcanite Gutta Percha, per lb., . .	3.50	oz.,	4.00

NOTE.—The above Rubbers and Gutta Perchas will be furnished in pound or half-pound packages to any Dentists in the country on receipt of price, and stating that they cannot get them at the Dental Depots in or near their place of business. Circulars giving full instructions how to use all of my Rubbers and Gutta Perchas, will be found in each box or package with the article ordered.

EUGENE DOHERTY, 417 & 419 Kent Ave., Brooklyn, E. D., New York.

[Oct86-1y]

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

GIDEON SIBLEY,

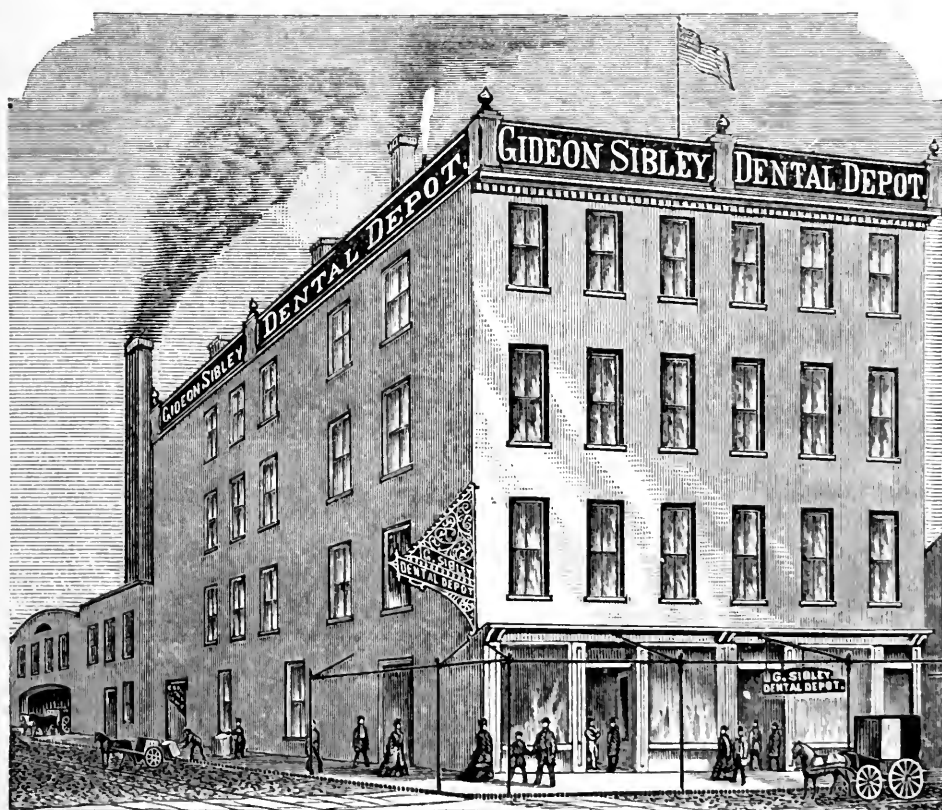
MANUFACTURER OF

ARTIFICIAL TEETH

AND DEALER IN

DENTAL SUPPLIES,

THIRTEENTH AND FILBERT STS., - - PHILADELPHIA, PA.



It is gratifying to find, that after years of assiduous labor to produce the best Tooth made, their superiority is so universally acknowledged, and the rapid demand for them has necessitated large additions to our factory and salesroom.

POINTS ON WHICH WE SEEK COMPARISON:

STRENGTH, NATURAL SHAPES, TEXTURE, COLORS, LARGE DOUBLE-HEADED PINS, &c., COMBINED WITH OUR VERY LARGE ASSORTMENT OF MOULDS AND VARIETY OF SHADES.

ASK YOUR DEALER FOR THEM, OR SEND ONE DOLLAR FOR A SAMPLE SET.

[ja85-1y]

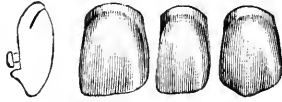
FOR SALE BY BUFFALO DENTAL MFG. CO.



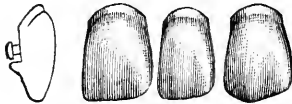
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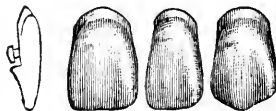
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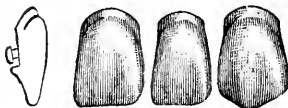
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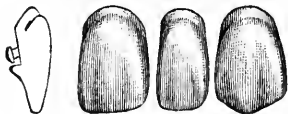
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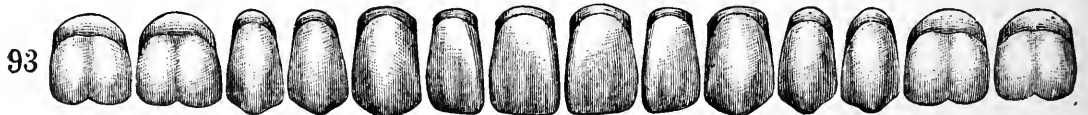
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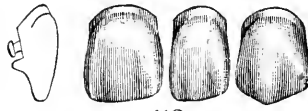
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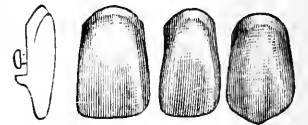
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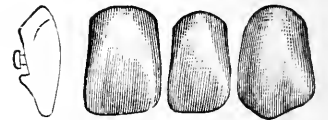
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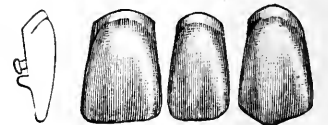
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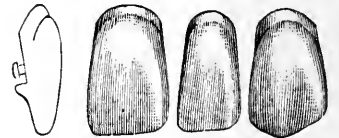
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110



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114



98

GIDEON SIBLEY,

MANUFACTURER,

13th and Filbert Streets,

PHILADELPHIA, PA.

IF YOU WANT

FORCEPS—CORRECTLY MADE,

EXCAVATORS—KEEN CUTTING AND WELL TEMPERED,

PLUGGERS—ALL KINDS, FINELY SERRATED,

AMALGAM INSTRUMENTS—EVERY KIND,

BONWILL ENGINE PLUGGER POINTS,

ELECTRIC MALLET PLUGGERS,

AUTOMATIC PLUGGER POINTS PROPERLY FITTED,

ENAMEL CHISELS THAT WILL DO THEIR WORK,

RUBBER DAM FORCEPS AS THEY SHOULD BE,

FOIL CARRIERS—ALL KINDS,

ENGINE BURS—BEST QUALITY, OR

REPAIRING CAREFULLY ATTENDED TO,

SEND TO

LUKENS & WHITTINGTON,

DENTAL INSTRUMENT MANUFACTURERS.

626 RACE STREET, - - PHILADELPHIA, PA.

LAWRENCE'S AMALGAM.

"THE OLD RELIABLE."

This Amalgam has received the endorsement of the Profession at large for over forty years, which would seem to render any remarks as to its excellence superfluous. Retail price, Three Dollars per ounce.

Purchase only of reliable dealers, their agents, or of the inventor and only manufacturer,

AMBROSE LAWRENCE, 476 Columbus Ave., Boston, Mass.

Low's Counter-Irritant Dental Plasters.

The application of counter-irritants to the gum, in the form of a plaster, has some advantages over the ginger or pepper bag, as the plaster can be made to adhere to the gum, and is less bulky. It will, therefore, easily retain its place, and the effect will be more prompt and certain, the action of the remedies not being interfered with by a constant wash of saliva.

It is questionable if one degree of stimulation should be expected to answer the purpose equally well for all stages of pericemental inflammation, and in order to meet the varying indications which are presented, three different plasters have been devised, as follows:

PLASTER No. 1 is a very mild stimulant, suitable rather for warding off threatened inflammation, than for reducing it when present. It is recommended for use after filling pulpless teeth or setting artificial crowns.

PLASTER No. 2 is a more rapid stimulant, composed of capsicum, and is applicable to all cases when it is desired to bring about resolution instead of hastening suppuration.

PLASTER No. 3 is a Mustard Paste, and is by far the best application when suppuration is inevitable and the desire is to hasten the discharge and relieve the patient.

Each bunch of six plasters is wrapped in tin-foil to prevent deterioration by exposure to the air, making a convenient package for the patient.

They are put up in boxes containing nine dozen of either kind or assorted. Price, \$1.00 per box.

Prepared by DR. F. W. LOW, Attica, N. Y.

BUFFALO DENTAL MFG. CO., General Wholesale Agents.

Owing to the Constantly Increasing Demand

FOR



AND WITH

NEW FACILITIES FOR MANUFACTURING

I am enabled to announce the following

GREAT · REDUCTION

In Prices, which hereafter will be

4 cts. per Gallon in 100 Gallon Cylinders.

3½ “ “ 500 “ “

COMPLETE GAS APPARATUS OUTFITS.

	<i>Former Prices.</i>		<i>Reduced to</i>
Surgeon's Case, with 4½ gal. gas bag and 100 gal. Cylinder filled,	\$42.00	\$40.00	\$37.75
Surgeon's Case, with 7 gal. gas bag and 100 gal. Cylinder filled,	44.00	42.00	39.00
Univers. Tripod, with 4½ gal. gas bag and 100 gal. Cylinder filled,	36.00	34.00	32.75
Univers. Tripod, with 7 gal. gas bag and 100 gal. Cylinder filled,	38.00	36.00	34.50

SEPARATE PARTS.

Cylinder containing 100 gal. gas,	\$16.00	\$15.00	\$14.00
“ “ 500 “	44.00	42.00	39.50
Re-filling 100 gal. Cylinder,	6.00	5.00	4.00
“ 500 “ per gal. 3½ c. . . .	22.50	20.00	17.50

I continue to REFILL Cylinders of ALL
MAKES, as well as to GUARANTEE the KEY-
STONE VALVE, and the WEIGHTS of the
Cylinders as marked ON THE LABELS.

Dentists having EXPERIENCED TROUBLE
and LOSS OF GAS through FAULTY valves,
will find it to their ADVANTAGE to have them
REPLACED by the KEYSTONE valve at a
nominal cost.

PHILADELPHIA, PA., April 1, 1885.

H. D. JUSTI,

———— DENTAL DEPOT, —————

No. 516 Arch St., - Philadelphia, Pa.

BRANCH: 66 E. MADISON ST., CHICAGO, ILL.

Sole Agent for the Keystone Gas Regenerating Co.

KING'S OCCIDENTAL AMALGAM.

PRICE REDUCED TO \$3.00 PER OZ.

This Amalgam has been before the profession in Ohio and Western Pennsylvania for some years, and all who have used or tested it agree that it has merits over any other Amalgam in the market.

The process of manufacture differs from that of other Amalgams, and

BY A NEW INVENTION

Dr. King is enabled to obtain better results, both in regard to COLOR, SHRINKAGE, and EXPANSION, than is obtained in any other alloy in the market.

Test for color consists of sixty grains of Sulphuret of Potassa, dissolved in one ounce of water. Amalgam plugs to be left in this solution twenty-four hours or more. The Occidental will remain bright after this test, and we know of no other Amalgam, at even double the price, but that will discolor. All who would use the best should buy

KING'S OCCIDENTAL AMALGAM.

TESTIMONIALS.

I believe the Occidental Amalgam has *no equal* in the market to-day.

PITTSBURGH, September 22, 1881.

GALE FRENCH, D. D. S.

I think the Occidental Amalgam superior to any I have ever used.

PITTSBURGH, September 22, 1881.

J. G. TEMPLETON, D. D. S.

ASK YOUR DENTAL DEPOT FOR IT, OR SEND TO

**RANSOM & RANDOLPH, Wholesale Agents,
83 JEFFERSON STREET, TOLEDO, OHIO.**

FOR SALE BY BUFFALO DENTAL MANUFACTURING CO.

Give us your Subscription now for 1886.

OHIO STATE JOURNAL OF DENTAL SCIENCE

A Monthly Journal of 48 to 56 pages, for Two Dollars per Year.

Editor: GEO. WATT, M. D., D. D. S., Xenia, Ohio.

PUBLISHED BY

**RANSOM & RANDOLPH,
TOLEDO, OHIO.**

[ja86-1y.]

Subscriptions received by BUFFALO DENTAL MANUFACTURING CO.

THE ROBINSON • REMEDY

A SURE CURE FOR

PYORRHOEA, ALVEOLARIS, AND OBTUNDER FOR
SENSITIVE DENTINE.

PREPARED BY

SAM'L A. CROCKER & CO.,



(Successors to SPENCER & CROCKER,)

Ohio • Dental • & • Surgical • Depot,
CINCINNATI, OHIO.

DIRECTIONS.—Clean all the calcareous deposit from the teeth with a thin, sharp chisel, pushing the chisel always toward the apex of the tooth, and clear down to the alveola ridge; make a fine rope of fibers of cotton, by twisting it between the thumb and finger, a little larger than floss silk; cut the ropes into the length desired to go round the teeth to be treated, and do not treat more than four or five at one time; wet the ropes with the remedy and lay them on a napkin to absorb all that will come off, and place them round the necks of the teeth and push down thoroughly to the alveola border; when you have done one tooth do the next, and remove the rope from the first and so on until all are treated.

As a rule one application will cure. If the teeth are loose, take a fine binding wire and wire them to the adjoining teeth that are not loose; and in two or three days the pockets will all be closed and the teeth tight and well. For sensitive dentine and exposed pulps, wet a pledget of cotton and apply directly to the cavity—it will coagulate the serum in the tubuli and cut off all communication with the nerve, and the operation will be painless.

PRICE PER BOTTLE, 50 CENTS.

Something New Russell's Liquid Cement.

Prepared from Formula of Dr. R. Russell,

FOR REPAIRING RUBBER PLATES.

NO DOVETAILS NOR UNDERCUTS REQUIRED.

DIRECTIONS.—File the rubber plate down to a thin edge where it is broken, then coat the surface with the liquid cement and pack on your rubber, and vulcanize as usual. You will find the union of the two rubbers perfect. This will also be found useful in strengthening rubber plates that are very thin from excessive scraping. Roughen the part to be strengthened and apply the Liquid, then pack on the rubber and vulcanize. A trial will convince all of its merits.

• • PRICE PER BOTTLE, 50 CENTS. • • TRADE SUPPLIED. • •

Dr. Hamlin Barnes's Prepared Gold

PATENT APPLIED FOR

For Lining Rubber Plates.

PURE GOLD is universally recognized as affording the most congenial surface known for contact with the mucous tissue of the mouth. The Rubber or Vulcanite base is as universally admitted to provide a fit superior to any other material not molded, as it is, to every inequality of the plaster model. Dr. Barnes's preparation is an *absolutely pure heavy rolled Gold*, and Vulcanite Plates lined with it by the method which he has devised, combine the best known contact surface with the most perfect fit, completely disposing of the most serious objection urged against the use of rubber as a base for artificial dentures. The time required for its application is, say, twenty minutes, and the method is so simple as to be readily comprehended by any dentist, from the directions which accompany each package of the material. The beauty of the work and its positive comfort to the wearer will solve the question of additional compensation. The rich, bright color of the Gold is not affected by the process.

Manufactured under the personal supervision of Dr. Hamlin Barnes, and put up in packages containing sufficient of the Prepared Gold to line the largest plate, with clear, concise directions for use.

PRICE PER PACKAGE, \$3.50. THE S. S. WHITE DENTAL MFG. CO., Sole Agent.

BOW-SPRING AND No. 1 IMPROVED RUBBERS

OBSERVE THE QUANTITY PRICES

BOW SPRING.		No. 1 IMPROVED.	
Less than 10 lbs., . . .	Per lb., \$2.75	Less than 10 lbs., . . .	Per lb., \$2.25
In 10-lb. lots, . . .	" 2.25	In 10-lb. lots, . . .	" 2.00
In 25-lb. lots, . . .	" 2.00	In 25-lb. lots, . . .	" 1.90
In 50-lb. lots, . . .	" 1.80	In 50-lb. lots, . . .	" 1.75

THE S. S. WHITE DENTAL MANUFACTURING CO'S PINK RUBBERS.

OUR No. 1 PINK is equal in desirable qualities (color and toughness) to the best Pink Rubbers now in the market, while we are able to quote it at a lower price than any of the best rubbers of other manufacturers. It has been on the market over a year, and has received very high commendations.

THE No. 2 PINK is a lower grade. It lacks the strength of the No. 1, but it will be found very satisfactory for facing. Put up in half-pound boxes.

PRICES: No. 1 PINK RUBBER, PER LB. \$5.00
No. 2 PINK RUBBER, PER LB. \$4.50

THE S. S. WHITE DENTAL MANUFACTURING COMPANY,
PHILADELPHIA, NEW YORK, BOSTON, CHICAGO, BROOKLYN.

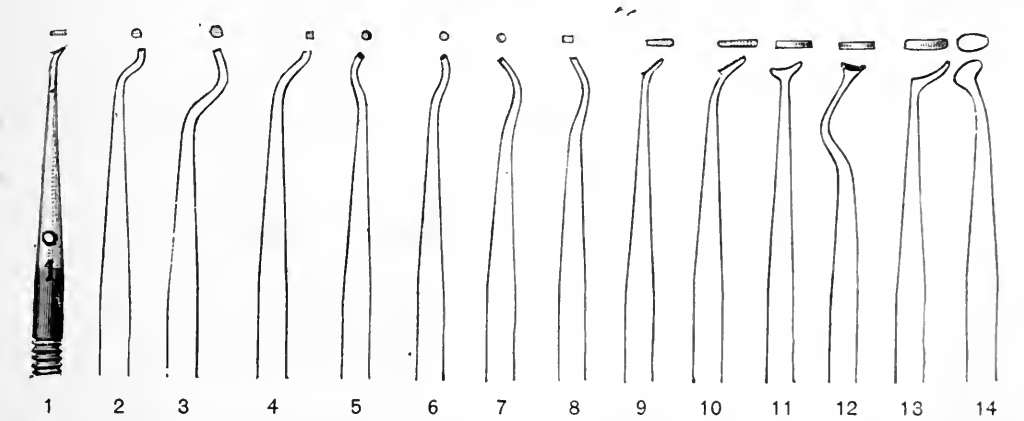
SET · “L”

A · NEW · SET · OF
SHORT · POINTS

• • FOR • THE • •

SNOW · & · LEWIS
· AUTOMATIC

PLUGGER



THE above selection of short Automatic Plugger Points has been subjected to a test of nearly two years, and are now brought out with the belief that they are the most completely practical set yet designed to meet all cases and situations. There is not a superfluous point in the set.

Particular attention is called to

• • • • •

NUMBER · I 2

• • • • •

Which is especially designed for finishing and condensing the lingual portion of fillings in incisor teeth. This is a remarkably effective point. (The cut does not properly show the angles on this point.)

• • •

NUMBERS · I 3 · AND · I 4

• • •

Are smooth, and are designed mainly to obliterate the marks of the serrated points. No. 13 for the six anterior teeth, and No. 14 for bicuspid and molars.

PRICES SET “L” AUTOMATIC PLUGGER POINTS.

❖	Nos. 1, 2, 3, 5, 6, 7, 13, 14,	each \$0.50	❖
❖	Nos. 4, 8, 9, 10, 11, 12,	each .75	❖
	Per set of 14,	8.50	

R. S. WILLIAMS,

MANUFACTURER OF

Standard Gold Foil,

Standard Gold Cylinders,



Standard Gold Pellets,

Standard Gold Blocks,



Over one hundred and fifty varieties kept in stock, each
differing in quality, size or style.

Standard Electric Gold,


Gold and Platinum Folds.

Amalgam Alloy No. 1,

Standard Gutta Percha Blocks, for Fillings,

Standard Dental Rubber,

ARE THE BEST.

 Send for Price List and Descriptive Circular.

R. S. WILLIAMS,

No. 115 West 42d Street,

(Seven doors West of Sixth Ave.)

NEW YORK, N. Y.

FOR SALE BY BUFFALO DENTAL MANUF'G CO.

New · Specialties · in · Gold FOR FILLING.

• • • • •

SOFT · BURNISH · GOLD · CYLINDERS.



Sizes, $\frac{1}{2}$, 1, 2, 3, and assorted.

These cylinders are made with particular reference to the new system of packing gold with engine burnishers.

They also have excellent qualities for use with Mallet or Hand Pluggers.

A prominent New York operator says: "As a soft gold they surpass anything I ever used."

• COHESIVE · BURNISH · GOLD · CYLINDERS ·



Sizes, $\frac{1}{2}$, 1, 2, 3, and assorted.

Are similar to the above, but are *fully Cohesive*. They also have the quality of toughness, so the *plugger point carries the gold before it* instead of cutting through. It is claimed for them that they possess, in the highest degree so far known, the

MAXIMUM OF COHESION WITH THE . . . MAXIMUM OF SOFTNESS AND TOUGHNESS

• • • • •

It is believed these two varieties of Burnish Gold Cylinders possess such desirable and hitherto unobtained working properties, that they are well worth a trial by all first-class operators.

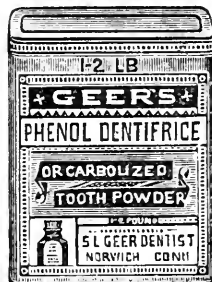
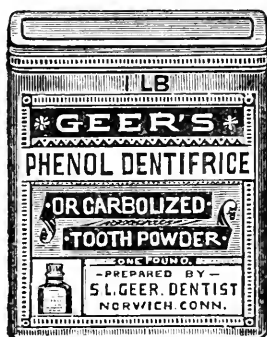
\$4.50 per $\frac{1}{8}$ oz.—\$17.50 per $\frac{1}{2}$ oz.

For Sale by
B. D. M. CO.

R. S. WILLIAMS,
No. 115 WEST 42d STREET,

NEW YORK
CITY.

GEER'S



Phenol * Dentifrice OR CARBOLIZED TOOTH POWDER.

To maintain the health of the **Mouth** and preserve the freshness and beauty of the **Teeth**, the frequent use of a dentifrice becomes indispensable. It is important to obtain an article free from obnoxious ingredients, the presence of which would surely cause numerous troubles, the origin of which is unsuspected.

The proprietor of Phenol Dentifrice recommends it to the notice of those not already acquainted with its long established merits. This preparation, which has been in the highest repute since its introduction in 1870, and sold to the **dental profession** throughout the **United States** by the leading **Dental Depots**, is a scientific combination of the finest materials, so united, chemically, as to insure the greatest efficiency and the best possible results upon the **MOUTH, TEETH and GUMS**.

The excellence of this Dentifrice, the formula of which originated with the proprietor, a dentist of thirty years' practice, has obtained for it the strongest recommendation of many of the professors in our **DENTAL COLLEGES**, as well as from those most noted in private dental practice.

As a **TOOTH POWDER** for General Use, by Old and Young, it stands Unrivalled.

..... \$1.00 PER LB., IN 4, 1, 1/2 & 1/4-LB. CANS

SOLD BY BUFFALO DENTAL MANUFACTURING COMPANY,

WHOLESALE AND RETAIL

FLETCHER'S

Carbolized · Resin

IS HIGHLY RECOMMENDED AS A SUBSTITUTE FOR CREOSOTE IN NEARLY
EVERY CASE; BEING MUCH MORE EASILY HANDLED, MORE EFFECTIVE
AND LESS DISAGREEABLE TO THE PATIENT THAN CREOSOTE, AND LEAVES

NO · ODOR · IN · THE · OPERATING · ROOM

ON making the application, gently clear the cavity without excavating, dry it with spunk or absorbent cotton, and then apply carbolized resin on a small ball of cotton, sealing over with a very thin sheet of wax. The sealing is not absolutely necessary, as the CARBOLIZED RESIN IS ALMOST INSOLUBLE. In most, if not all cases of exposed nerve, a few applications will so entirely destroy the sensitiveness that the tooth may safely be filled without capping. It is an invariable specific for "tooth-ache," so-called. . . .

In addition to its other valuable properties, Fletcher's Carbolized Resin will be found to be the

* * MOST RELIABLE STYPTIC * *

in obstinate cases of bleeding. A plug of amadou or cotton, wet with Fletcher's Carbolized Resin and packed in the cavity, will stop bleeding instantly in cases where other remedies have failed.

PRICE, 25 CENTS PER BOTTLE.

If it Becomes Crystalline or Too Thick for Use, add a Few Drops of Chloroform.



COPAL-ETHER VARNISH.

FLETCHER'S COPAL-ETHER VARNISH IS MUCH BETTER
THAN SANDARAC VARNISH FOR ALL PURPOSES.

PRICE, 25 CENTS PER BOTTLE.

FOR SALE BY ALL DEALERS IN DENTAL GOODS.

JAMES V. LEWIS, No. 15 COURT STREET, BUFFALO, N. Y.

Coolidge's Gas Regulator

FOR DENTAL VULCANIZERS.

[Patented October 31, 1871.]

FOUR · YEARS · OF · CONTINUED · USE · PROVES · ITS · VALUE.



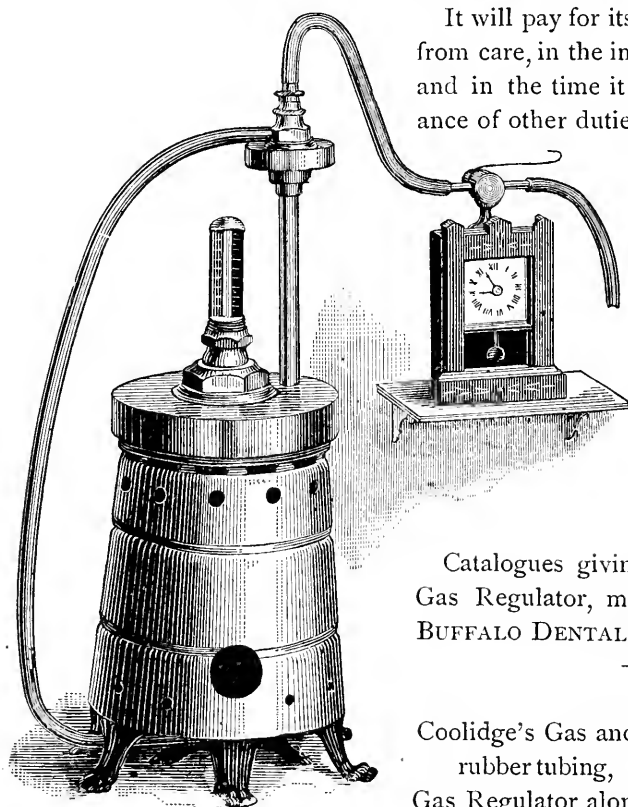
IT RELIEVES THE DENTIST ENTIRELY FROM THE
CARE OF THE VULCANIZER, AND WILL BE FOUND A



PERFECT SAFEGUARD AGAINST EXPLOSIONS.



Being operated by steam pressure, it is more sensitive and accurate in its operation than the thermometer, which is operated by the conduction of heat through the body of the vulcanizer. As a consequence, it secures *superior and uniform results in vulcanizing*.



It will pay for itself many times over in the freedom from care, in the immunity from dangerous explosions, and in the time it gives the operator for the performance of other duties.

The cut-off valve is operated by the clock, giving complete control of the time of vulcanizing, as well as the temperature.

The two devices are wholly independent, as will be seen by reference to the illustration. They are made entirely of metal. No rubber is used about them in any form, except as connecting tubing, as experience has shown it to be wholly unreliable.

Catalogues giving a full description of Coolidge's Gas Regulator, mailed free upon application to the BUFFALO DENTAL MANUFACTURING CO.

PRICES.

Coolidge's Gas and Time Regulator, with 3 ft.	
rubber tubing,	\$10.00.
Gas Regulator alone,	5.00
Extra Rubber Tubing, per ft.,	12 cts.

TESTIMONIALS.

BATH, N. Y., March 4, 1886.

* * * The only trouble I have with my Gas Regulator is, that I am disgusted with myself that I did not get it long ago.

A. OSGOOD.

EASTON, Pa., March 16, 1886.

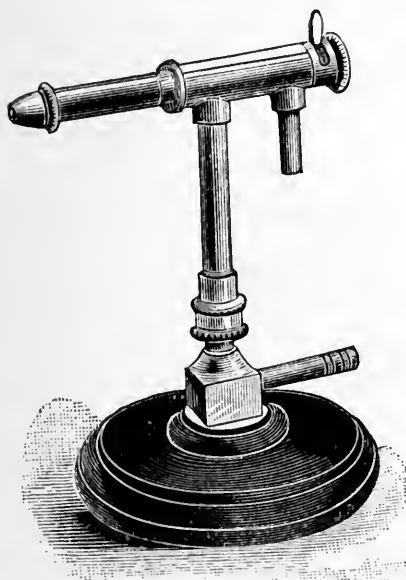
BUFFALO DENTAL MFG. CO.:

Gentlemen—Have used the Coolidge Gas Regulator for over a year, and think it fills a long-felt want. Would not be without it.

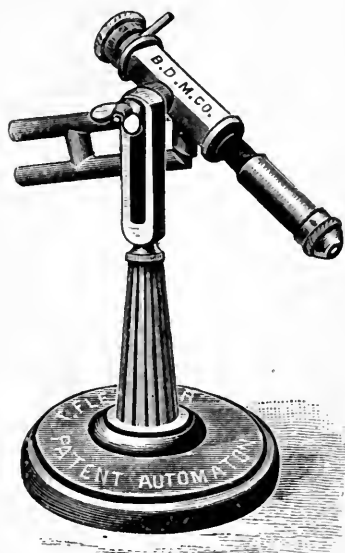
Yours respectfully, T. F. KING.

SOLDERING APPARATUS

. . . FOR GOLD CROWN WORK. . . .



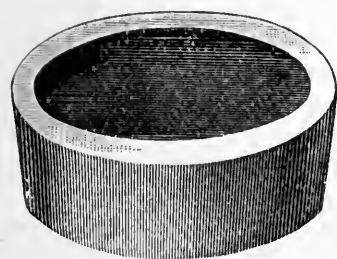
Automaton Blow-Pipe — No. 6 A.
Price, \$4.00.



Automaton Blow-Pipe — No. 6 D.
Price, \$4.50.

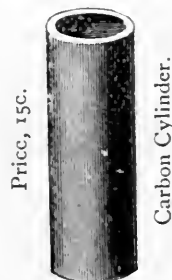
The increasing use of the Richmond and other patterns of artificial crowns has created a demand for better appliances for soldering gold than have heretofore been in use in dental laboratories, and the articles here illustrated are presented as forming a complete outfit for the purpose. Two forms of the Automaton Blow-Pipe are shown. The No. 6 A

is mounted on a ball-joint, situated immediately above the base, and is capable of motion in any direction. The No. 6 D is fastened to an upright by means of a thumb-nut. It can be removed and used in the hand when it is desirable to do so. The size of the flame is adjustable by means of the small lever shown at the butt end of the Blow-Pipe, which regulates the supply of both gas and air by the same motion, giving the most complete control of the heat.



Carbon Block. Price, 25c.

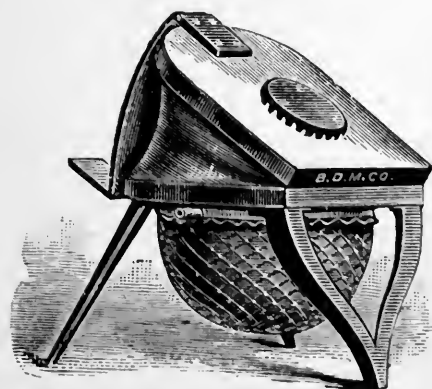
The cupped ends of the Carbon Cylinders are admirable supports for the crowns while soldering. The Carbon Blocks are four inches in diameter, and the Cylinders $1\frac{1}{8} \times 3$ inches. They are perfect non-conductors, and much more cleanly to use than charcoal.



Price, 15c.

Carbon Cylinder.

The cupped ends of the Carbon Cylinders are admirable supports for the crowns while soldering. The Carbon Blocks are four



Foot-Bellows — No. 9. New Style.
Price, \$5.00.

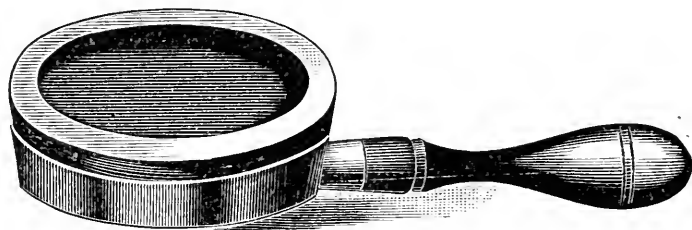
The No. 9 New Style Foot-Bellows is well adapted for furnishing the blast required for soldering. The elasticity of the rubber disk keeps a uniform pressure of air. The use of the Bellows will be found much preferable to furnishing the blast from the lungs.

For further description of these and other forms of Gas Blow-Pipes and Soldering Apparatus, send for our Price List of Fletcher's Laboratory Apparatus. Just issued.

Manufactured only by the

BUFFALO DENTAL MANUFACTURING CO.

CARBON BLOCK HOLDER.



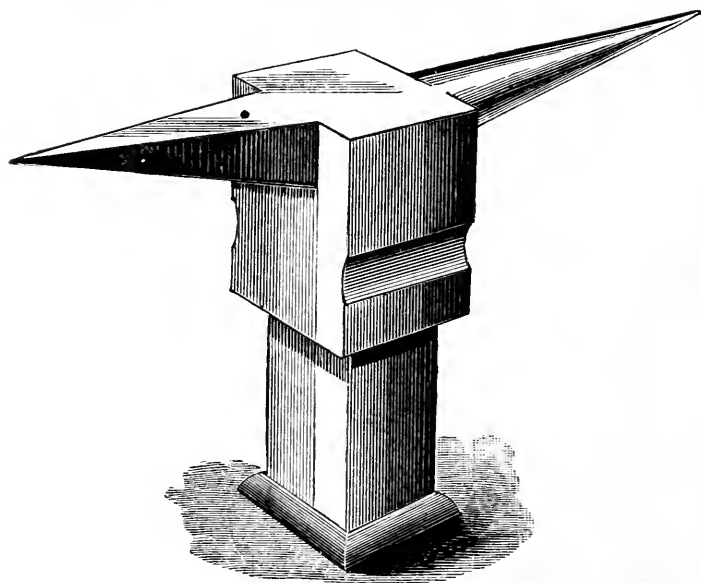
A VERY CONVENIENT DEVICE FOR
 HOLDING CARBON SOLDERING BLOCKS.

PRICE:

CARBON BLOCK HOLDER,	25 CENTS.
CARBON BLOCK AND HOLDER,	50 CENTS.

TOOLS • FOR • CROWN • AND • BRIDGE • WORK.

Every description of Tools and Metals used in Crown and Bridge Work on hand at the market prices.



No. 1 Anvil.

Steel Anvils.

No. 1, Polished, to hold in vise,	50 cts.
No. 2, Polished, same as No. 1, but mount- ed on iron base,	\$1.25

Soldering Tongs

7-inch,	45 cts.
9 "	50 "
12 "	55 "

BLOW-PIPES OF ALL KINDS, LAMPS, ANVILS, HAMMERS, PLIERS, SNIPS,
 FRENCH FILES, MANDRELS, CARMICHEL DIES, GOLD AND SILVER
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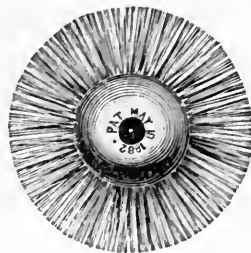
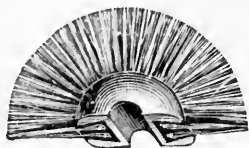
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